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THE ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

PUBLISHED MONTHLY. ST. JOHN, N. B., JUNE, 1887. VOL. I. No. 1.

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☞ For further particulars see *Special Announcement*, page 18.

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ANNOUNCEMENT.

To issue a journal that will meet the wants of educationists of the Atlantic Provinces of Canada has long been contemplated. We believe that the time is fitting to launch the enterprise, and the first number is issued with the confidence that it will lead to a closer union in educational work in these Provinces, and that there is here a field for the support of a live educational journal.

The many letters of encouragement that we have received justify the hope that the REVIEW will meet with a favorable reception. Let us briefly announce the aims of its managers, and how they hope to make it, before all other educational periodicals, the one which will be the most worthy of the support of our teachers.

It will be devoted to the interests of Maritime Province teachers in the fullest sense. Educational questions will be approached and discussed in a fair and impartial spirit. A free, yet just and careful criticism of our educational systems and administration will be made when necessary. It will note improved methods in education and seek to keep its readers informed upon them. One object which its promoters have in view is to make it invaluable to teachers in supplementing deficiencies of text books, especially in regard to the natural science subjects required to be taught in our schools, and these will be illustrated by *native objects.* Better methods of teaching English are called for. Industrial education will receive that attention which its importance demands.

The REVIEW will aim to be helpful and instructive. It will discuss in a practical way questions of school management, discipline, methods—and would here invite teachers to make this department of the paper a place where they may give and receive assistance. Short, practical and pointed articles will always be welcome.

There are several articles of special interest to educationists, which we are obliged to hold over for another issue. As this is the season for teachers' conventions, summer schools, and college re-unions, a large portion of our space is given up to these topics in which a general and lively interest is felt.

INDUSTRIAL EDUCATION.

"What are you doing in technical education in your Province?" was the oft-repeated question put to those who had charge of our school exhibit at the Colonial Exhibition in London, last season. Experienced educationists examined our school system, our courses of instruction, the photographs of schoolrooms and apparatus, and the scholars' work which accompanied these; and the examination was evidently satisfactory, to judge by the comments that appeared in English and American journals. One of our school systems was referred to by a high authority as "*theoretically,* the best in America"; by another as "one of the most perfect, *in its principles at least,* to be found in any State or country." The italics are our own. But the practical Englishman who has been waking up to the importance of industrial education, and who sees England's greatness—nay, its very existence—threatened by the improved methods of manufacture in Germany, Switzerland, Belgium, France,—the direct outcome of industrial education in those countries—asked, "What are you doing in technical education?"

Now, what *are* we doing in industrial education? Nothing. Have we any industrial schools, or are there any departments in our colleges devoted to technical training in arts and manufactures? None whatever. Do our schools give boys and girls any special training that will fit them for industrial pursuits? We are compelled to answer this also in the negative. And yet our schools are, taken as a whole, excellent, and in results compare favorably with those elsewhere that seek to give a good elementary training in the rudiments of knowledge. And so far our common schools do an excellent work, and the high schools and colleges complete the training and equip our youth for their vocations in life. But what vocations? The graduates of our high schools and colleges are taught to look to some profession, or to mercantile pursuits, as the only occupations which they are fitted by education to fill. The consequences are apparent. The professions are overcrowded, and for every vacancy in a merchant's office or behind a counter, there are applicants by the score. And very often such positions are filled by those who are not at all adapted for them, but who would, if efficiently trained, have won success, and perhaps distinction, in some mechanical pursuit, and have added so much to the wealth of the country.

But this special training cannot be had in our schools and colleges. The student has to go abroad for it. He sees there the advantages that are presented to him: new and improved methods of manufacture, the social elevation to which ambitious and industrious artisans may attain, a greater stimulus to invention, and other advantages. He will probably not return, and thus the country loses some of its best mechanical talent.

Now what is the remedy for this state of things. It seems clear that the one remedy is—greater attention to industrial education. Wide-awake and far-seeing business men declare that we have come to a standstill in our development; that the building of wooden ships is a thing of the past; that the lumber industry is waning, and that the energies of the people must be directed into new lines and new pursuits, if we would not be distanced in the march of improvement. To compete successfully with other countries, industrial education must receive encouragement. If the permanent prosperity of these Provinces is to be secured, attention must be directed to the raw material—the undeveloped resources which are so abundant—and the conversion of this raw material into the best products. To do this successfully, educated labor and technical skill must be brought into play. Industry, directed by intelligence and skill must be applied, if we would have a place in the markets of the world, and if we would retain among us our best minds and attract thither an intelligent and desirable class of immigrants. That technical education will attract capital to a country is proved in the case of Switzerland, notably in the canton of Zurich, whose splendid system of technical education was the subject of an able and interesting address delivered some time ago by Dr. MacGregor, of Dalhousie College, in several localities in these Provinces. When recently it was proposed in the Council of Zurich to lessen the grant for technical education—"The manufacturers showed by undeniable evidence, that this single institution (a technical school conducted at government expense) had in a few years been the means of bringing capital to the country to the extent of millions of pounds sterling."

But we have already carried this article beyond the limits designed. That there is a demand here for technical education goes without saying; that the longer provision for it is delayed the longer will our interests suffer. A technical and an agricultural school established in each Province, either independently or as a department of some college, would be a great boon. Such institutions, established on an economical basis, would no doubt be looked upon as fit objects of endowment by liberal and enterprising men who have the prosperity of the country at heart. The influence of these schools in directing and stimulating industrial drawing, study of agriculture, practical mathematics, and other common school studies, would be very great. Nova Scotia has already taken the initiative, in establishing an agricultural farm in connection with its normal school. This has been placed under the charge of Prof. Smith, of Truro, whose zeal and scientific knowledge will stimulate industrial education in Nova Scotia.

We shall refer to this subject again. In the meantime the columns of the REVIEW are open to those who would discuss it in a practical and intelligent spirit.

WE feel sure that the article in another column on education in Newfoundland will be read with great interest. The writer has had ample opportunity of judging, from many points of view, of the system that prevails in the sister colony, and he has the courage of his convictions. We trust before long that Newfoundland will hasten to cast off its present cumbrous and expensive system and fall into newer and more progressive lines of educational development.

NOVA SCOTIA SUMMER SCHOOL OF SCIENCE.

Our advertising columns contain an announcement of the Nova Scotia Summer School of Science. The object of this institution is, we understand, the training of our teachers in the natural history of our country, and the science of common things, the better to enable them to carry out the spirit and intention of the provincial course of study in its entirety. The date of the introduction of this course of study, defective as it necessarily must be, will in the future be referred to as an important epoch in our educational history. Under the old system, the teacher might be a hermit, acquainted with only his books and the configurations of his paper lined cell. His pupils might be brought up under the anchorite rule corrupted by the freedom of modern civilization. His writing, his spelling, his arithmetic, his Euclid and his Latin might be most accomplished. But while these all would give him a knowledge useful in the world, it gives only a part. In the struggle for existence, an observant and intelligent understanding of every phase of nature which may present itself gives the individual a tremendous advantage. Our teachers are *now* required to train the child to observe accurately, to read the meaning in some of the least obtrusive hieroglyphics of nature, to understand the orderly action of the forces which environ him, and in the midst of which and subject to which he must earn his daily bread. The teacher must know what he has to teach. As the text book cannot effectively acquaint him with the mysteries of his environment, he seeks the assistance of those who know a little more than himself. Hence the summer school, with its elementary but practical science teaching. The work which such an institution can do is yet to be demonstrated. In the Pictou Academy, science clubs have been in operation with varying success for several years. In Halifax last winter, a very successful school of science under the presidency of the Supervisor was formed. Geology was taken up, and with the splendid collections in the Provincial Museum, it goes without saying that the work was thoroughly done.

The inception of this Provincial School of Science is due to the Alumni Association of the Provincial Normal School, the energetic secretary of which did not rest until the scheme outlined by it was submitted to the Educational Association of the Province, by which it was approved.

The site of the school is in one of the most pleasant and most interesting parts of Nova Soctia. The governors of Acadia College have with great public spirit placed their fine buildings and apparatus at its disposal. From this point as a centre excursions to interesting localities of continental fame are arranged for. On the whole it appears to us that the study of science under such conditions will be as exhilarating and recreating as a fortnight of picnics, while at the same time there are the best opportunities given for scientific work. And last, though not least, Wolfville, no doubt due to the literary and scientific influence of Acadia College, is one of the most cultured communities in the Province, not excepting the metropolis. Its appreciation and support of the higher education are monumental. We trust the summer science school may draw much inspiration from such propitious surroundings.

THE UNIVERSITY OF MOUNT ALLISON.

The closing exercises in connection with the educational institutions at Sackville took place a few days ago. The public exhibition of the Male Academy was held in Lingley Hall on Monday, the 30th ult.; the public closing of the Ladies' College in the same place on the following day; and the Convocation of the University on Wednesday, the 1st inst. These exercises always draw large audiences, and this year the capacity of the Hall was too limited to hold all seeking admittance. The public school system has had some effect on the attendance at the Male Academy, but the present indications, we are informed, point to a large increase the ensuing year. Mr. T. T. Davis, B. A., will continue in charge as Principal of the Male Academy, and will have around him a staff of good and energetic teachers. Great success has been attained at the Ladies' College. The Rev. B. C. Borden, M. A., is Principal. While no efforts have been spared to keep a high standard in sound and solid education, a very great advance has been made in fine arts, music, and modern languages. Prof. Mack, Prof. Chisholm, and their assistants, have succeeded in working up the musical department to a high state of efficiency. Miss Mack—a pupil of Patti—has proved herself an accomplished instructor in vocal culture. The attendance at the Ladies' College last year more than taxed the capacity of the building—additional dormitory accommodation had to be provided. During the year 140 were in attendance. The largest attendance at any one time was 84 resident students and 40 from outside.

The University, under the management of its able and distinguished President, Dr. Inch, has had a very successful year. From the President's report it appears there were 95 in attendance. Of these 7 were seniors, 7 juniors, 15 sophomores, and 21 freshmen regularly matriculated, and 46 taking special courses. It is proposed to increase the present very efficient faculty of the University by the addition of Mr. Tweedie, who, as Gilchrist scholar, for the past four years has been pursuing his studies in London, Edinburgh, and Germany. Mr. Tweedie, it is expected, will take the department of English literature, philology, etc.

The success of these institutions of learning is highly gratifying; it indicates a growing desire for advanced education among our people. The exercises of the Alumni and Alumnæ societies, at which Dr. Alward delivered an oration on the jubilee year, and Mrs. Woodbury read an essay on the higher culture for women, gave great pleasure and satisfaction to the large audience present. We cordially extend our best wishes for continued success to our educational friends at Sackville in their important work.

N. B. SCHOOL OF SCIENCE.

In 1883 the N. B. Natural History Society held its first summer camp at Bocabec, in Charlotte County. This was followed in 1885 by a second, held at Frye's Island, St. George, which was more largely attended than the first. The object was to develop an interest in natural history among the younger members of the Society, and especially among teachers and students. Mr. W. F. Ganong, who has been studying the invertebrate zoology of our southern coast for several years, has each year been accompanied by a small but zealous band of students. In a letter written from Harvard in May last he says: "I hope that another summer will not be allowed to go by without a start being made in a summer school of zoology for N. B. teachers."

On further communicating with Mr. Ganong, and with members of the Natural History Society of New Brunswick, we are in a position to announce that arrangements are in progress for a summer school of science to be opened in St. John on Friday the first of July, and to continue one week; that the rooms and museum of the Natural History Society will be placed at the disposal of the summer school; that no expenses, except for board, need be incurred by teachers attending the school. Further announcements will be made as soon as arrangements are perfected; and a complete programme of work will be presented at the first session of the Educational Institute, on Tuesday, June 28th. Those who wish to join the school may communicate with G. U. Hay, St. John, Cor. Sec. of the Natural History Society, or H. C. Creed, Secretary of the Educational Institute, Fredericton.

The advantages of a summer school of science are very fully set forth in another column, in connection with the N. S. summer school, the excellent programme of which is an indication of what is intended to be accomplished by our fellow-workers across the Bay.

A few words regarding the teachers and methods to be employed: Mr. Ganong is an earnest and enthusiastic naturalist. His enthusiasm is catching, as those well know who have felt the influence of his teaching. He is a distinguished graduate in science from the N. B. University, and is a resident Fellow at Harvard University, where he is pursuing a special course in invertebrate zoology. Mr. G. F. Matthew has more than a Canadian reputation as a geologist, and it must be a source of gratification to those who may avail themselves of the advantages of the summer school, to know that he has consented to give instruction in a subject on which he is a recognized authority. The departments of botany and ornithology will be under the supervision of other members of the Society.

It is desirable that the work shall be as practical as possible, and include a considerable amount of field work. No place could be chosen to combine interest and variety more than St. John. Its geology and botany are particularly interesting, and within a short distance of the city a considerable variety of forms in marine zoology may be found. A practical feature in the school will be microscopic work, and the careful examination of specimens collected. To do this effectively a field day may alternate with one for practice in the laboratory. If those who attend (and we trust the number will be large) only become possessed of a few leading principles—be stimulated to observe, to study, to work—an incalculable good will be accomplished for practical education in this Province.

A GLANCE at the advertising pages of the REVIEW will be instructive. Publishing houses and institutions of learning have seen the advantages of this medium and have availed themselves of it. A limited number of advertisements from other business houses have been inserted, and may be studied with advantage. Our regular advertising space is the 1st, 2d, 23d and 24th pages, leaving twenty pages of reading matter. To meet the requirements of advertisers for this issue we are reluctantly compelled to extend that space, but hope in the next issue to keep the advertisements within the limits above named, in order that the twenty pages devoted to reading matter may not be encroached upon.

FERNDALE SCHOOL.

No. I. A Cocoon.

Teacher. (*Stroke of bell*). Books aside. Position *first*. Lesson on Nature. What day of the month is it? Any one?

Chorus. First of June.

Teacher. Of the number of specimens you have brought me to-day, I select these for our lesson. Now, who brought them?

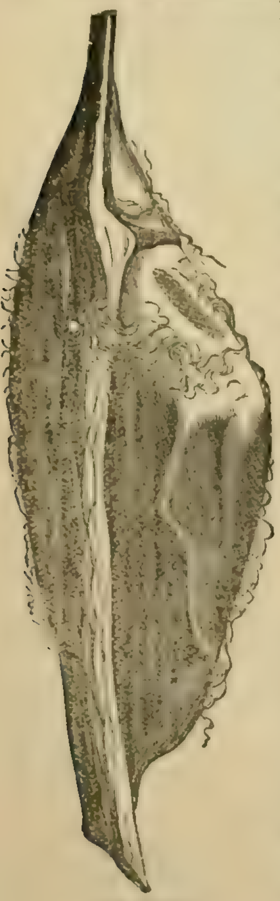
Scholars. (*Two hands up*).

T. Where did you find this, Johnnie?

Johnnie. I found it on the limb of an apple tree.

T. Where did you find yours, Tommy?

Tommy. I found it on the limb of an apple-tree, too, when I was looking to see if the blossom buds were opening.



The Cocoon.

T. Well, we are lucky to have two of the same kind. I shall put one in this glass jar on the window-sill, where we can watch what may become of it in the warm sun-light, without any danger of its getting away from us. The other, which I show you here, we shall take to pieces and examine. What is this stick which you see in it? Any one?

Chorus. The twig of the apple-tree on which it grew.

T. What is it, Johnnie?

Johnnie. A sort of a nest, I suppose.

T. Well, it is not exactly a nest. We may as well give it the correct name. It is a *cocoon*. I write the name on the board. Now, I blot it off, and shall see if every one can spell and pronounce it properly. Together.

Chorus. C-o-c-o-o-n, cocoon.

T. The French call it *cocon*, which means, in their language, a little shell. Now, with this sharp penknife, I shall cut open the little shell to see what is inside; but, first tell me what you can observe on the outside? How long is it?

S. Over three inches, I think.

T. How broad?

S. Over one inch, I would say, in the thickest part.

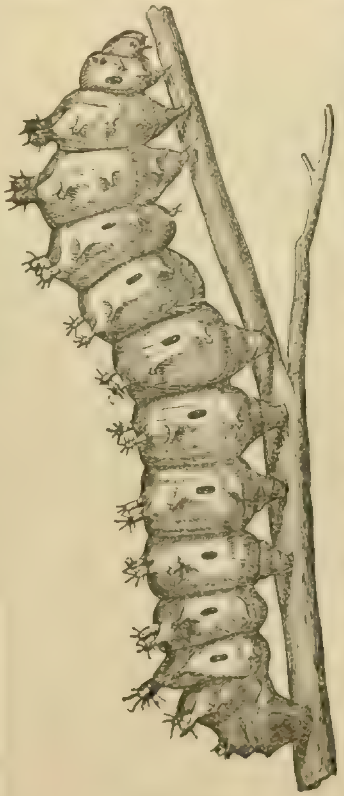
T. What is the color—you?

S. Grey. *Another* — brown — greyish brown — brownish grey.

T. Yes; all of you are partly right. It is a greyish brown. Take it in your hand and tell me what its substance looks and feels like.

S. It is like a thin, stiff and tough kind of paper; but it is as hairy as some kinds of cloth—more hair in some places than in others.

T. Correct. These hairs are really fibres of a kind of silk. A very large green caterpillar, like this, three or four inches long, and thicker than your stoutest finger, spun this cocoon last fall. Sometime next September or October you may see this huge caterpillar sluggishly creeping along the limb of some tree or bush, looking for a proper place to commence the construction of its cocoon. You will, of course, capture it, and put it in one of our glass jars, with a piece of twig, if you like. In a short time afterward you may have the pleasure of seeing it at its work. The silk is stored in a liquid condition in two large glands in each side of the caterpillar. These glands have a common opening near its mouth. You will simply see the insect raise its body and touch its mouth to one point of the jar, and as it draws it away a fibre of silk is drawn out, which is attached to another point, and so on. By looking carefully at this figure you will see that it has three pairs of small feet on three front segments, and four pairs of broad sucker feet on middle segments. The large warts on the third and fourth segments are coral-red, the others on the back are yellow, except those on the two last segments, which are blue, like the small warts on the sides. We must be on the lookout for this caterpillar in the fall. That is why I now tell you what it is like.



The Larva.

Let us proceed with the examination of our cocoon, I cut this outer shell with my sharp knife. What do you see inside?

S. There is another woolly looking shell inside.

T. How much vacant space is there between the two shells?

S. An eighth of an inch—no, it is about a quarter of an inch, I am sure. It is not completely vacant, as there are a few silky fibres which keep the smaller shell exactly in the middle of the larger.

T. What use would such a space serve, supposing our caterpillar to be living within the inner shell all winter.

S. It would help to keep the cold out.

T. How? Have you seen any other creature use double walls to keep the cold out?

S. Yes. Our houses have boards outside and inside the frame, with a space of air between.

T. Can you think of any other example?

S. Yes. They put double windows on in our house during winter, and the cold can hardly get across the air space between them, so that there is hardly ever any frost on our inner windows.

T. Very good. But who would have thought that the caterpillar knew so much?

S. *(Hand up, teacher nods).* You said that the caterpillar spins its cocoon with fibres of silk, but the outer shell which you have just taken off is more like parchment, or a thin skin, than cloth made up of fibres. How could all the fibres be cemented together to form this complete skin-like covering?

T. When you capture your caterpillar next fall, you will find that as soon as he has completed the fibrous covering of his shell he pours out a quantity of soluble silk which fills all the meshes of the fibrous structure, and soon drying cements the whole into one continuous sheet. He then proceeds to spin the inner shell. You see that this inner shell is quite heavy. There is something in it which can be seen to move. Let us cut open the tough woolly looking shell. There! see what has come out!

S. A big, oval, blackish thing, covered with a shining and ornamented surface. And it is alive. It moves.

T. Here is some rubbish found in the inner cocoon with this black living object. What is it?

S. Why! they are fragments of the skin of a caterpillar—of its head—and of its feet.

T. Correct. After the caterpillar completed its inner cocoon it had no further use for its feet, mouth, spinners, etc. These parts were moulted off, and its whole body became contracted into the roundish form covered by the sculptured skin you see surrounding it.

S. (*Hand up.*) Do all caterpillars go through such changes?

T. They all go through similar if not the same changes. In some there are no outer cocoons—only this thin, tight-fitting, ornamental covering which in some species shines like metallic substances. Some species shine like gold, hence the Greeks called them the *chrysalis,* which meant in that ancient language *golden colored.* We have, then, before us, the *chrysalis* stage of the caterpillar. I write the word on the board, and shall then see if you all can spell and pronounce it properly.

But I am going to open this chrysalis case, and we shall then see the living transformed caterpillar. I break the thin case away carefully with the point of my pen-knife. There it is. What do you see?

S. A large, wet-looking, juicy body, with small wings no bigger than a bumble-bee's, laid flat on its side and meeting over its back. Two long feathery things from its head are also folded back over its body, and it has six feet crumpled up under the front part of its body. The greater part of its body is very plump, like the body of a huge moth.

T. Correct. This chrysalis is the stage before the moth. I will give you a more common name than *chrysalis*, however. As we have seen, this stage is not always accompanied with the golden color which the word chrysalis implies.

Little boys and girls present are called *pupils*, from the Latin word *pupus* a boy, *pupa* a girl. From *pupus*, comes the Latin *pupilla*, a little girl. The French shortened it to *pupille* (pronounced in two syllables). The English still further shortened it to *pupil.* But pupils become eventually full grown men and women. And this *chrysalis* in the ordinary course of nature would have become a full grown moth. Naturalists therefore call the chrysalis stage the *pupa.* Pupils should therefore be able to remember the meaning, spelling and origin of the word. The pupa is the young, the immature, the growing stage of a moth, a butterfly, a beetle, a house fly, or any insect. When the pupa comes out of its chrysalis shell, it is all at once a full grown, finished animal.

S. *(Hand up near the window).* There is a noise going on in the cocoon in the jar, and there is something coming out at the lower end.

T. Hurrah! The luckiest thing in the world! Just what we are wanting to see. The moth, under the influence of its warm surroundings, is coming out of its cocoon. I place the jar here, and let us watch it. What do you see?

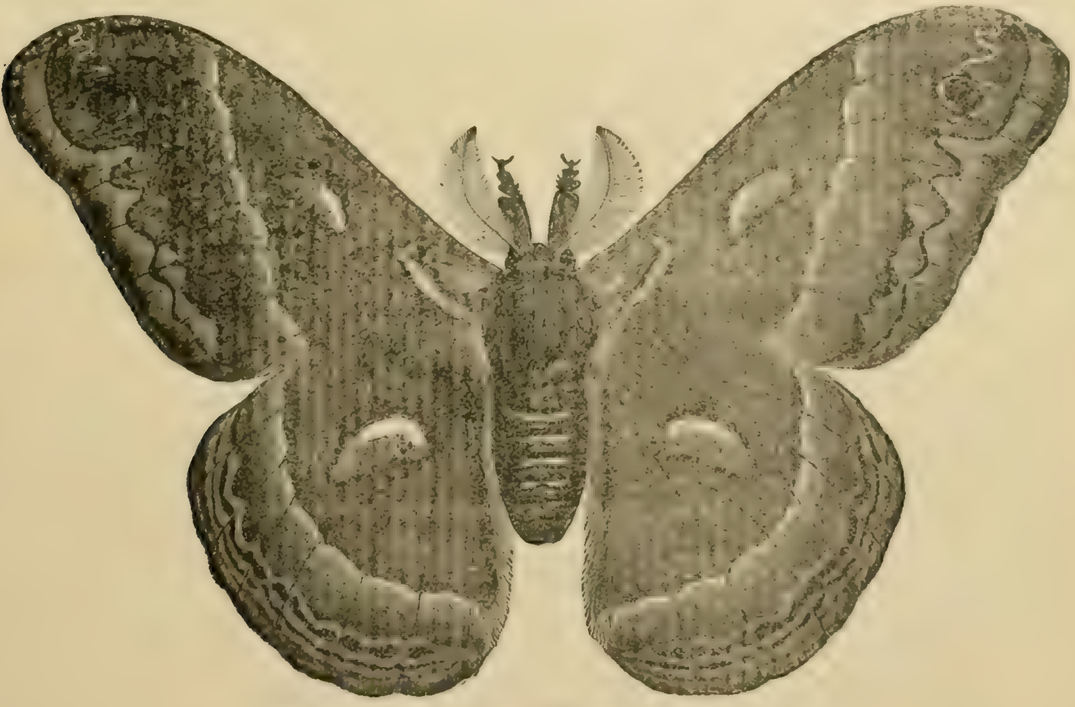
S. The lower part of the cocoon appears to be moistened, and little bushy feet are pushed out in front, and the moth is pulling itself out by them.

T. What does it look like?

S. Its head and fore part of the body are covered with a coat of very fine, silky fur, brownish red with bands of white. Two large, feathery horns are pressed back over its head. Now the horns are out and standing up.

T. These two feathery horns are called *antennæ*. When the antennæ are simply like two bristles with a knob on the end of each, the insect is known as a butterfly; but when they are feathery or thickened in the middle they are called moths. So this is a true moth.

Chorus. It is all out. What an ugly thing! Such a big, soft, wet looking thing, and such absurdly small, wet-looking wings! See how it clings to the under side of its cocoon, and appears to be trying to spread its wings.



THE CECROPIA EMPEROR-MOTH. (*Platysamia Cecropia.*--Linn.)

T. Watch its wings.

S. Oh! they are growing larger. You can see them growing.

T. Yes, and in half an hour you may see them measure half a foot from tip to tip. They will be nearly full grown before our lesson is done. While watching our moth completing its pupa stage and becoming the perfect insect—or *imago*, as the naturalists call it in Latin—we shall note the balance of its life's history. Here is a sketch of the form it will have in a very few minutes. General color, greyish brown, variegated with shades of white, red and black. The colors are in the minute scales which cover the membraneous skin of its wings instead of feathers. These scale feathers appear only as colored dust to the naked eye.

When the female is at liberty, in a short time she begins to deposit her eggs, of which she has between two and three hundred, on the underside of the leaves of plants. The eggs are about the size of a head of a pin, of a dirty white color, with a reddish mark near the middle. The eggs are generally glued on to the leaves in pairs. In a week, or week and a half, the eggs are hatched and out comes a small, black, knobby caterpillar, which naturalists call the *larva* of the moth. Larva is the Latin word for a mask. And no one will dispute that the Cecropia Emperor-moth is completely masked when it appears as a caterpillar. This black larva eats voraciously, and casts its skin several times, each time becoming nearer in size and color to the large pale green caterpillar, three or four inches long, with its curious knobs in red, yellow and blue.

S. Do they eat much?

T. One or two placed on a young apple tree will in a short time strip it of all its leaves.

S. And one moth may produce 200 or 300 of them?

T. Yes.

S. Suppose 100 of these to become perfect female moths by next summer, then one moth this summer might produce over 20,000 caterpillars by the end of next summer, any two or three of which could strip an apple tree.

T. Yes, if they had no natural enemies and plenty to eat they would in a few years cover the earth at this rate.

S. Do they do much damage?

T. Not so much as many other insects.

S. And are they found in every part of this country?

T. They may probably be pointed out in every school section in Nova Scotia, New Brunswick and Prince Edward Island.

S. What are their natural enemies, then, which keep them so much subdued that we suffer so little from their depredations?

T. Very insignificant looking, but very powerful ones. We shall consider them in some future lesson. In the mean time keep your eyes open, and note carefully everything you see.

S. Does the caterpillar feed on the leaves of any other tree than the apple tree?

T. You must try to observe that yourselves. They are pretty general feeders, having been found on the plum, pear, cherry, maple, willow, lilac, red currant, hazel, birch, elm, honey locust, hawthorn and elder. *(Stroke of the bell.)* A. H. M.

Pictou, N. S.

THE STARS OF SUMMER.

A singular proof of popular ignorance of the starry heavens, as well as of popular curiosity concerning any uncommon celestial phenomenon, is furnished by the curious notions prevailing about the planet Venus. When Venus began to attract general attention in the western sky in the early evening some two months ago, speculation quickly became rife about it, particularly on the great Brooklyn Bridge. As the planet hung dazzlingly bright over the New Jersey horizon, some people appeared to think it was the light of Liberty's torch, mistaking the bronze goddess's real flambeau for a part of the electric-light system of the metropolis. Finally (to judge from the letters written to the newspapers, and the questions asked of individuals supposed to know something about the secrets of the sky), the conviction seems to have become pretty widely distributed that the strange light in the west was no less than an electrically illuminated balloon, nightly sent skyward by Mr. Edison, for no other conceivable reason than a wizardly desire to mystify his fellow-men. I have positive information that this ridiculous notion has been actually entertained by more than one person of intelligence. And it is not improbable, that as Venus glows with increasing splendor in the serene evenings of June, she will continue to be mistaken for some petty artificial light instead of the magnificent world that she is, sparkling out there in the sunshine like a globe of burnished silver. Yet Venus as an evening star is not so rare a phenomenon that people of intelligence should be surprised at it. Once in every 584 days she re-appears in the sunset sky—

> "Gem of crimson-colored even,
> Companion of retiring day."

No eye can fail to note her, and as the nearest and most beautiful of the Earth's sisters it would seem that everybody should be as familiar with her appearance as with the face of a friend. But the popular ignorance of Venus, and the other members of the planetary family to which our mother, the Earth, belongs, is only an index of the denser ignorance concerning the stars—the brothers of our great father, the Sun. I believe this ignorance is largely due to mere indifference, which, in its turn, arises from a false and pedantic method of presenting astronomy as a jumble of mathematical formulæ and a humble handmaiden of the art of navigation. * * *

The reader will find it both interesting and instructive to watch the movements of Venus through the summer. On June 1st, Venus will be near Saturn in the constellation Gemini. But the two planets will rapidly part company, Saturn sinking toward the horizon day by day until it is no longer seen, while Venus, moving eastwardly, rises higher every evening. About the middle of July, Venus, having reached her greatest eastern elongation, will turn upon her track and move westwardly, setting a little earlier every night. At the middle of August she will attain her greatest brilliancy, and will be a superb phenomenon. Being then in that part of her orbit which passes between the earth and the sun, her illuminated disc will be in the form of a crescent. A good field-glass, under favorable circumstances, will show this crescent form of Venus, and a most beautiful sight it is. The crescent will grow larger and narrower in proportion as Venus approaches nearer to the line joining the earth and the sun, and, as she approaches that line, of course she will draw closer to the horizon, until about the end of August, she disappears from the evening sky, to reappear in the east as a morning star in the autumn.

Jupiter will remain in the neighborhood of Spica in Virgo throughout the summer. The surface features of this majestic planet are far beyond the reach of an opera or field-glass, but some of the members of his little family of four moons may occasionally be caught sight of. With an opera glass not more than one or two of these can be seen as excessively minute dots of light half-hidden in the glare of the planet. If you succeed under favorable circumstances in seeing one of these moons with your glass you will be all the more astonished to learn that there are several apparently well-authenticated instances of one of the moons of Jupiter having been seen with the naked eye.

With a field-glass, however, you will have no difficulty in seeing all of the moons when they are properly situated. If you miss one or more of them, you may know that it is either between you and the planet, or behind the planet, or buried in the planet's shadow, or else so close to the planet as to be concealed by its radiance. For the convenience of the beginner, I will indicate the positions of Jupiter's moons for several evenings in June, based upon the "Nautical Almanac" predictions; the time of observation is supposed to be 10.30 o'clock, p. m.:

* * * On June 8th two of the satellites will be on one side and two on the other, the two on the west being close together, while those on the east are widely separated.

On June 14th two will be close together on the east, while one is visible on the west, and the fourth, the outermost of the system, is passing just above the north pole of the planet, and so close that it will probably be beyond the ability even of a powerful field-glass to detect it.

On June 17th there will be a very good opportunity for the inexperienced observer to see all four of the satellites, as two will be on each side of the planet, and all will be well separated.

On June 22d one satellite will be on the east of Jupiter, and the other three on the west, all in a bunch, and close to the planet.

Of course, since the motions of the satellites, particularly of the inner ones, are very rapid, their positions are continually changing, and their configurations are different every night.—*Garret P. Serviss in Popular Science Monthly.*

THE P. E. ISLAND SCHOOLS.

The report of Mr. D. Montgomery, Chief Superintendent of Schools for P. E. Island, is interesting and instructive. We make several extracts from it, noting with pleasure the progressive character of the work that is being done across the way.

As evidences of advance Superintendent Montgomery notes with satisfaction the readiness and intelligence with which the teachers enter into every forward movement connected with school work.

Referring to two most important practical subjects—English composition and drawing—he refers to the marked increase of pupils studying the former, the importance of giving greater attention to the latter, which is so closely connected with industrial pursuits.

Remarking upon the diligence and faithfulness which has characterized the work of inspection, the Superintendent believes that it would be of very great service to appoint an additional Inspector, and closes with the gratifying announcement that "the year just closed has been one of the most successful in the history of our public schools." This seems to be borne out by the following statistics condensed from the report:

"There are at present 431 school districts on the Island, distributed as follows: 172 in Queens County, 139 in Prince, and 120 in Kings. There were but ten districts in which there was no school, against 74 in the year 1876. In eight of these ten districts new school houses were in course of erection, while one was not sufficiently large to support a school and the other had been attached to other districts. The number of teachers employed during the year was 498. Of these 55 were of the first class, 137 of the second and 306 of the third class. The number of pupils enrolled was boys 12,317, girls 10,097, total 22,414, an increase of 431 over the number for previous year. The average percentage of attendance was about 56. The total expenditure by the Government on education, for the year, was $111,992.21. Of this, the sum of $101,536.56 represents the amount paid in statutory allowance, supplements, and bonus, to the teachers. $11,873.37 was the amount paid as supplements by trustees. During 1886 the teachers received as salaries $112,331.93, an increase of $1,997.19 over 1885. The total expenditure for education by the Government and the districts was $148,778.96, an average of $6.64 for each pupil enrolled. The highest salary paid to teachers was $900, and the lowest $130."

We need organization among teachers to secure a better public sentiment. Teachers need to begin by creating a sentiment for improvement among the pupils. Trees, and shrubs, and flowers, and walks, and nooks in parts of the yard, fences and convenient gates, shades and light ornaments for the rooms, a water service of pitcher and waiters, convenient places for the care of apparatus—all these the teacher of forty children can secure. And every addition of the kind is an addition to the moral forces of the school. Amid such surroundings it becomes natural to learn politeness, care, consideration for others; to condemn selfishness, rudeness, slovenliness; to appreciate the beauty of truth, duty and love.—*Western School Journal.*

EDITORIAL NOTES.

INSPECTOR GUNN says: "At no time in our educational history has there been more interest manifested in popular education, than during the present year."

WILL those who receive copies of this issue, and who may not be sufficiently interested in its contents to subscribe, kindly hand it to others who may become subscribers.

PROVINCIAL examiners must note that Nova Scotia is moving in the direction of reform in English spelling. The Council of Public Instruction prescribes "Gage's Physics," which shortens such old forms as "height" to "hight"—one step in the direction of the universally longed-for orthographical millennium.

IN sending out such a large issue—5,000 copies—of the first number of the REVIEW, some omissions and mis-directions are unavoidable. If those who receive the paper hear of such omissions, by which persons interested have not received it, they will kindly inform us so that a copy may be sent without delay.

WE UNDERSTAND that on account of the Queen's jubilee celebration in Halifax, the contemplated exhibition is postponed to next year. Principal H. S. Congdon, of the Dartmouth schools, has been the presiding genius in these movements. His intelligence and energy are bringing Dartmouth prominently to the front in educational reform.

WE are glad to announce that arrangements are being made by the Secretary of the N. B. Educational Institute to secure *free return* tickets up to and including July 6th. Members travelling by the N. and Western Railway or by any division of the N. B. Railway must purchase Society return tickets which will be sold at the principal stations. Without these, certificates of attendance will be useless.

INSPECTOR MACDONALD of Antigonish says: "The change made in the 'Trustee's Return,' adapting it to the course of study, is a step from which I expect the very best results." So say we all. The administration of educational affairs in Nova Scotia has of late years been very felicitous. No catastrophic elimination of defects has overturned the old world. But there is the steady noiseless evolution of a new cosmos, which painlessly absorbs the imperfections of the old.

OF OUR teachers, Inspector Roscoe says: "They are becoming alive to the fact that new modes and improvements are being introduced at a rapid rate; and to keep in line with the best and surest methods of accomplishing this important work committed to their charge they must examine and use these methods as far as practicable in the schools they are teaching. The Provincial Normal School leads in these improvements, and to it must we look as a beacon light to guide us in matters so important."

INSPECTOR H. CONDON, of Halifax County, in his annual report, says of Dartmouth: "The industrial exhibition, held in the Christmas holidays of last year (1885), was a great success, and more than fulfilled the anticipations of its promoters. As a consequence, preparations are already being made for a Provincial industrial exhibition, to be held in Dartmouth the ensuing August. Those interested expect that a valuable impulse will be given to the cause of education throughout the Province. Special efforts will be made to draw the attention of the public to the merits of kindergarten system, and, among the attractions offered, classes will be conducted in which Frœbel's principles will be practically illustrated."

J. H. MURRAY, LL. D., formerly President of the Philological Society of Great Britain, who is now editing the new historical dictionary of the English language—the greatest philological work of the age, is a spelling reformer. He says: "The question of etymology was long ago settled and done with by philologists. It is pitiful to see the expressions of Archbishop Trench, uttered just a quarter of a century ago, when English philology was in its pre-scientific babyhood, and scarcely anything was known of our language in its earlier stages save the outward forms in which it had come down to us in manuscript or print, quoted against the rational reconstruction of our spelling. But it is also unfair to Dr. Trench himself, who then stood so well in the front of philology, that we may be perfectly sure, that, if leisure had been given him to keep pace with the progress of the science, he would now have been second to no one as a spelling reformer. For philology has long since penetrated the mere drapery and grappled with 'the study of words,' not as *dead marks*, but as living realities, and for these living realities it first of all demands, 'write them as they are; give us facts and not fictions to handle.'"

A LITTLE boy at a village school had written the word "psalm" in his copybook, and accidentally blotted out the initial "p" with his sleeve. His little sister sitting at his side burst into tears over the disaster, but the spelling reformer defiantly exclaimed: "What if I did leave him out? He didn't spell nothing, and what was the good of him?"

LITERARY NOTES.

THERE will shortly be published in neat and convenient form a small volume designed to meet the requirements of the natural science course prescribed for the schools of New Brunswick. It has been written by L. W. Bailey, Ph. D., Professor of Natural Science in the New Brunswick University. It treats respectively of minerals, plants and animals, with illustrations of the three kingdoms. It contains valuable references to the natural products of the Provinces. It is written in an easy and pleasant style, so characteristic of the author. Its appearance will be looked for with much interest. Dr. Bailey has for years been a teacher of natural history, and his connection with the Dominion Natural History Survey has given him peculiar advantages for observing the occurrence of the geology, flora and fauna of the Province. It has been prescribed for use in schools by the Board of Education, and is being prepared for publication by J. & A. McMillan, which is a guarantee that the mechanical execution will be excellent.

PRINCIPAL CALKIN, of the Nova Scotia Normal School, who has found leisure in the midst of many duties to write several valuable text books for schools, will shortly publish in a convenient volume, his lectures on school organization and management, general principles and methods of teaching. The book is intended for the use of student teachers at the normal school; and from the large experience of Mr. Calkin, and his ability as a thinker and writer, teachers will welcome the appearance of this addition to our educational literature. It will probably be published by D. H. Smith & Co., of Truro.

A THOUGHTFUL and suggestive paper in the June *Century* by the Rev. T. T. Munger, considering the true aim and the best methods of education, bears the title, "Education and Social Progress." It is in the nature of a protest against the tendency to specialization and false utilitarianism in contemporary college instruction.

BOOKS AND EXCHANGES.

THE POPULAR SCIENCE MONTHLY. The June number of this periodical is filled with many interesting and valuable educational articles, among which is a paper of great economical interest on "Industrial Education and Railway Service," summarized from a report made by Dr. W. T. Barnard to the President of the Baltimore and Ohio Railroad Company, on the feasibility of establishing shop-schools for apprentices in railway arts. The "Higher Education of Women" is discussed in the Editor's Table; the question of compulsory Greek in the college course receives another word; and the important announcement is made that with the July number the Hon. David A. Wells will begin a series of articles on causes of the depression of trade and industry. New York: D. Appleton & Co. Fifty cents a number, $5 a year.

WHERE ARE WE, AND WHITHER TENDING: This is a small book, costing but one dollar. The author is the Rev. Moses Harvey, F. R. G. S., St John's, Newfoundland. As a writer Mr. Harvey has been very prolific, and very favorably received. Several of the school books of Newfoundland, histories, sketches and geographical descriptions, have been written by him, from his splendid large history of the Island and his contributions to the Encyclopædia Britannica, down to the shorter articles appearing in some of our Canadian and United States papers. For such work he has lately been elected a Fellow of the Royal Geographical Society. But he is also a scientist of world wide reputation, having brought to the light of scientific investigation some of the wonders of the Newfoundland seas. His clerical training, combined with his extensive scientific reading and observations, make his opinions on the drift of modern civilization and modern thought of intense interest. The reader cannot help feeling the power of the conviction that we are changing, and yet, that with the loss of much of the long cherished notions of the past, our future promises to be better, in spite of the dreams of the pessimist. It is a book which any reader can enjoy, and when he finishes he feels that he has learned something of permanent value, and that he understands the world in which he lives more fully than before.

PATHFINDER PHYSIOLOGICAL SERIES: To meet the demands of the school law of New York and several other States, the Pathfinder series of text books on anatomy, physiology, and hygiene, with special reference to the influence of alcoholic drinks and narcotics on the human system, has been issued in three volumes. No. 1—an exceedingly attractive little book full of lively description and apt illustrations, is intended as an introduction to the study of the science—suited to children in the primary grades. In No. 2, the principles of the science are more fully announced and illustrated; while in No. 3, prepared for high schools and academies, the principles which underlie the preservation of health and the formation of correct physical habits are treated in a more elaborate manner. We will be glad when just such books are placed in the hands of every student in the Maritime Provinces. Published by A. S. Barnes & Co., New York.

SCIENCE, (a weekly); SCIENCE AND EDUCATION, (a monthly), and THE SWISS CROSS, the monthly magazine of the Agassiz Association, are all issued by the Science Company, New York. They are valuable publications, fully abreast of the age, and filled with matter that educators can hardly do without.

Giants and Pigmies: This is a charming history of the giants and pigmies which disported themselves in the lands and seas which afterwards developed into the present Maritime Provinces of eastern Canada —New Brunswick, Nova Scotia, and Prince Edward Island. It is a popular history of the succession of life through the geological ages of these Provinces. The author, however, extended his original idea by comparing our record with that of other portions of the world; so that the little book of 100 pages or so really contains a splendid outline of the Palæontological record of the world. This is just the book for the amateur geological student. The author is the Rev. David Honeyman, D. C. L., F. R. S. C., F. S. Sc. (Lond.), Provincial Geologist, Nova Scotia. The book can be procured for one dollar, from the author (Province Building, Halifax), or from the booksellers, we presume.

Economic Entomology: If any of our teachers, horticulturists, or others, wish to get a book plainly describing and illustrating, with cuts such as those in one of our articles, all the ordinary insects affecting our fruits injuriously, together with their life history, some of their more important parasites, and the best method of treating them, they can get it in a lately published Canadian work which has no superior in any country. The author, William Saunders, F. R. S. C., London, Ontario, who has for a number of years been President of the Entomological Society, of Ontario, and editor of the *Canadian Entomologist*, is one of the ablest, most widely known and highly esteemed entomologists in America. His book, Insects Injurious to Fruits, contains 436 pages, and 440 woodcuts so highly executed as to enable the veriest tyro to recognize his specimen. It costs but $3.00.

Guides for Science Teaching: To those teachers who desire to practically instruct classes in natural history, the Guides for Science Teaching, published by D. C. Heath & Co., Boston, will be found most valuable as a supplement to the prescribed text books on Natural Science. Being intended solely as aids to teachers, any attempt to use them as text books would defeat the object of publication.

I.	Hyatt's About Pebbles,	$0 10
II.	Goodale's Concerning a Few Common Plants,	10
III.	Hyatt's Commercial and other Sponges,	20
IV.	Agassiz's First Lessons in Natural History,	20
V.	Hyatt's Corals and Echinoderms,	20
VI.	Hyatt's Mollusca,	25
VII.	Hyatt's Worms and Crustacea,	25
VIII.	Crosby's Common Minerals,	30
IX.	Richards' First Lessons in Minerals,	10

PERSONAL NOTES.

We congratulate Professor George Lawson, Ph. D., LL. D., of Dalhousie College, on his election to the Presidency of the Royal Society of Canada. In his election honor is done to Nova Scotia; and in his person the Royal Society has for president a most accomplished gentleman, a scholar of unusually extensive acquirements, and a man who has left the imprint of his scientific knowledge in the industrial development of every part of the country, one might nearly say. The honor is well merited.

Mr. W. F. Ganong will spend some weeks this summer at Frye's Island, studying the development of *Ascidians*. He will continue also the study of the surface fauna of that region, begun last summer by him in conjunction with Dr. J. W. Fewkes, of Cambridge. Mr. Ganong hopes also to get some stages in the development of the Basket-fish (*Astrophyton Agassizii*), and the Sun-star (*Crossaster papposa*), two very important forms, of which the embryology is entirely unknown.

A Philadelphia correspondent of the Carleton *Sentinel* says that Mr. Charles Hay, son of Mr. Hugh Hay, of Woodstock, studying medicine at the University of Pennsylvania, passed his second year examination, leading his class and making 299 out of a possible 300. Mr. Hay is considered one of the ablest, if not the ablest, of his class, and is now taking special courses in certain branches of his profession.

The teachers of the Halifax schools have formed themselves into an "Amateur School of Science," under the direction of that indefatigable man of iron, Supervisor McKay, whom no amount of work appears able to break down. He cannot last forever, though. The city of Halifax will not find his equal again, when that comes.

The Lunenburg, N. S., *Progress* gives an admirable sketch of a most interesting and instructive lecture on "Prehistoric Man," by E. H. Owen, A. B., on the 17th ult. Mr. Owen was for a number of years Principal of the Lunenburg Academy, and has acquired no small reputation as a writer for the Provincial press.

W. Bliss Carman, M. A., of Fredericton, whose poems in the *Atlantic Monthly* and elsewhere have recently attracted much attention by their merit, is now at Harvard studying for the degree of Ph. D.

The degree of LL. D. has been conferred on A. A. Stockton, Esq., M. P. P., of St. John, by Victoria University, Coburg, Ontario, after a course of study prescribed by the faculty, supplemented by a rigid examination. Dr. Stockton is one of the few who find time amid active public and professional duties to seek honors in literature. The example of a busy professional man devoting his leisure to the study of philosophy and kindred subjects, while taking a lively interest in all public questions, is one worthy of imitation. Dr. Stockton also holds the degree of Ph. D. from Illinois Wesleyan University, as well as that of D. C. L. from the Mount Allison College. We congratulate him on his triple and well deserved honors.

Mr. L. E. Wortman, M. A., has been appointed to fill the new chair of modern languages at Acadia College, the appointment to take effect on the first of January, 1888. Mr. Wortman is a gentleman of scholarly attainments and large experience as a teacher.

Mr. W. L. Clay, of Summerside, P. E. Island, who recently graduated B. A. at McGill University, and won the Prince of Wales gold medal in mental and moral philosophy, made a higher record than that of any previous graduate of that institution.

Rev. Dr. Sawyer, of Acadia College, was recently made the recipient of a handsome cane, accompanied with an address, by the students of the senior class.

Professor Eaton, of the Normal School, has been elected a member of the Municipal Council of Truro. This speaks well for both the Normal School and Truro.

D. A. Murray, Esq., B. A., late Munro tutor in mathematics, Dalhousie College, is rusticating in the north of the Province. He intends going to the John Hopkins University next fall.

C. H. Livingstone, M. A., of the Gramercy Park Polytechnic school, New York, is among his friends in St. John enjoying a well earned vacation.

A. F. Emery, M. D., has received the appointment of resident physician in the St. John Public Hospital. Dr. Emery, who was one of the most diligent and progressive teachers in the St. John schools, is a distinguished graduate of Bellevue College, New York, standing fourth in a class numbering several hundred.

The project to unite Woodstock College and Toronto Baptist College in one institution under the name of McMaster University, is an accomplished fact. Dr. T. H. Rand displayed characteristic ability and energy in aiding to bring about this affiliation.

J. G. MacGregor, D. Sc. (London), Professor of Physics in Dalhousie College, has gone to Edinburgh to superintend the issue of a work on Kinematics and Dynamics, which he has been preparing and which will shortly be published.

A NOBLE WORK.

The New Brunswick Society for the Prevention of Cruelty to Animals, which was organized six years ago, has accomplished a great amount of good. In addition to its practical work of preventing cruelty, and of prosecuting persons who are known to have been guilty of causing needless pain, it has for the past two years had a very active Ladies' Educational Auxiliary Committee, who have full charge of the Band of Mercy movement in connection with the society's work. This movement, which is for the purpose of inculcating into the minds of the young the principles of kindness, had its origin in England, but has met with the universal approval of the young all over the world.

In Germany, Russia, Switzerland, France, and the United States of America, the bands exist in large numbers, and in the two last named countries have been received into the public schools, and now form part of the educational work of these nations. At the sitting of the Bureau of Education of the United States of America, in 1883, George T. Angell, Esq., President of the American Science Association, read a very interesting paper showing the importance and value of Bands of Mercy as a means of the prevention of crime. At the conclusion of the address the Bureau passed a resolution expressing a desire that such Bands should be welcomed in all the public schools. In the last three years upwards of 6,000 Bands have been organized on this continent, with a membership of 600,000 children and adults.

The attention of the teachers of all the public schools and Sunday Schools in the Maritime Provinces is directed to this noble work of teaching children to be kind and gentle towards God's dumb and dependent creatures, in the hope that they may see the importance of the work, and be led to organize Bands in their respective schools.

The Royal Society in England issue (at first cost) a beautiful badge or medal of membership, which was specially designed by the society's chief patron, HER MOST GRACIOUS MAJESTY THE QUEEN, and is intended to be used by all members of Bands living under the British flag. It is made of yellow (guinea gold colored) metal, and mounted on deep garnet silk, with pin attachment, and is sold only to members, price seven cents each.

Miss F. M. Smith, Carleton Street, St. John, N. B., is the Secretary of the Ladies' Committee, and will be glad to answer any correspondence in regard to the work, and furnish free of charge some reading matter with book of information, "How to Form a Band."

The Diploma of the Royal Society, which is a beautiful work of art, in a handsome frame, measuring 30x22 inches, has been sent out to the Ladies' Committee, by the order of Lord Aberdare, and will be offered for essay competition at a later date, notice of which will be duly given through the medium of this paper. COM.

St. John, N. B.

That the lower orders of creation suffer, there can be no doubt. I recollect reading not long since an incident in the life of Cuvier. He was watching a pair of swallows. The male was seized by a hawk. He shot the hawk, and wounded the swallow. He dressed the wound with all possible tenderness, and replaced it in its nest, while the hen fluttered sadly around, uttering cries of distress, and for three days left the nest only for food. Three days after the male was wounded it died. From that time the hen refused food. She died five days after her mate.

I know one of the best women of Massachusetts, who, some years ago, to shame her husband for speaking hastily and improperly, answered the call of her little canary bird, (to which she had never before spoken an unkind word), in a violent and angry tone. Within five minutes there was a fluttering in the cage, and when she got to it the bird was dead. I was told at New Orleans, winter before last, by a personal friend of Mrs. Hendricks, widow of the former Vice-President of the United States, that Mrs. Hendricks once killed a favorite mocking-bird in the same way. Other similar cases I have seen reported in various publications. There can be no doubt that great suffering can be caused to many of the lower animals simply by the tones of the human voice.

Concerning the importance of birds to agriculture, what Horace Greeley once wrote is literally true:

"The boy who robs a bird's nest is robbing the farmer of part of his crops. The farmer might as well consent that a strolling ruffian should shoot his horses or his cattle as his birds."

Agassiz believed that there is a future life for the lower animals as well as for us. He died in that belief. It is the belief, in some form, of the majority of the human race. Some two hundred volumes or thereabouts have been written on the subject. John Wesley, Jeremy Taylor, Bishop Butler, Coleridge, Lamartine, and many of the leading clergy of the past and present, have held and do hold this belief. Agassiz taught his pupils to kill fish by a blow on the back of the head as soon as they were caught, that they might not suffer before dying. President Lincoln, walking with a friend one day, stopped and put his hand down through the bushes. "What do you find there, Mr. Lincoln?" said the friend. "Why," answered Mr. Lincoln, "here is a little bird fallen out of its nest, and I am trying to put it back again."

"Thanks to my stars," says the celebrated Dr. Channing, "I can say I have never killed a bird. I would not crush the meanest insect that crawls upon the ground. They have the same right to live as I have: they received it from the same Father, and I will not mar the works of God by wanton cruelty."

"I saw a little spotted turtle," wrote Theodore Parker, "sunning itself in the shallow water. I lifted the stick in my hand to kill it; for though I had never killed any creature, yet I had seen other boys, out of sport, destroy birds, squirrels, and the like, and I had a disposition to follow their example. But all at once something checked my little arm, and a voice within me said, clear and loud, 'It is wrong.' I held my uplifted stick in wonder at the new emotion, till the turtle vanished from sight. I hastened home and told the tale to my mother, and asked what it was that told me that it was wrong. She wiped a tear from her eye, and, taking me in her arms said, 'Some men call it conscience, but I prefer to call it the voice of God in the soul of man. If you will listen and obey it, it will speak clearer and clearer, and always guide you right: but if you turn a deaf ear or disobey, then it will fade out little by little, and leave you in the dark without a guide. Your life, my son, depends on heeding that little voice.' "

From Waterton's "Wanderings in South America," I take the following:

TO TAXIDERMISTS.

If by my instructions you should be enabled to procure specimens from foreign parts, in better preservation than usual, so that the naturalist may have it in his power to give a more perfect description of them than has hitherto been the case, it will please me much.

But should they unfortunately tend to cause a wanton expense of life; should they tempt you to shoot the pretty songsters warbling near your door, or destroy the mother as she is sitting on her nest to warm her little ones, or kill the father as he is bringing a mouthful of food for their support, oh, then, deep indeed will be my regret that I ever wrote them.

In conclusion, it is not for me to decide for others. Every one must judge for himself or herself what is their duty in regard to the destruction of any of these lower forms of life which God has created. But whether He cares for His lower as well as human creatures, and how far He will hold us responsible for our treatment of them, are questions worthy the consideration of every human being who believes in God and immortality.—*Geo. T. Angell, Pres. Mass. S. P. C. A., in Swiss Cross.*

To prepare us for complete living is the function which education has to discharge.—*Herbert Spencer.*

QUESTION DEPARTMENT.

The editors do not bind themselves to answer *all* questions that may be submitted to this Department, and this refers chiefly to catch questions, the answers to which would benefit no one in particular, and to simple ones that may be answered with a little thought and research. Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

What are the botanical names of the numbered plants?—B. F.

No. 1 is *Viola pubescens;* 2, *Claytonia Caroliniana;* 3, *Erythronium Americanum;* 4, *Hepatica triloba;* 5, *Uvularia sessilifolia;* 6, *Sanguinaria Canadensis;* 7, *Dicentra cucullaria.*

What are the numbered specimens sent herewith?—M. Y.

No. 1 is a moss, *Bartramia pomiformis*, (apple moss); 2 is a lichen, *Peltigera canina* (mad dog lichen); 3, is a lichen, *Usnea barbata.* (Tree beard).

What is the best book to assist a teacher in giving the lessons on nature in the prescribed course.—B. M. D.

There is no good book adapted to this country. A book written by Dr. Bailey, and prescribed for New Brunswick schools, will shortly be issued from the press of J. & A. McMillan, St. John.

SCHOOL AND COLLEGE.

Six young ladies of the Victoria High School, St. John, were examined last week for admission into the N. B. University.

How would an annual term system work in Nova Scotia? Say an autumn session, from September to Christmas vacation; a winter session to the Easter vacation; a spring session to July, when the school year would end. What is the experience in N. B. and P. E. I. bearing on the question?

Dalhousie College is going to boom next year. Sir William Young has just left about $70,000, and next fall a magnificent building with all modern improvements, on a splendid site, will be opened. The President will soon surprise the public with the magnitude of the advance made by the institution since his election.

One of the elements, it would appear, which determines the general superiority of the Prince of Wales students at the universities, is the fact that all their teachers corresponding to the Nova Scotian grades B and C, require a knowledge of the ancient classics. Nova Scotian teachers have generally to commence at the rudiments of the classics when they determine to go to college, and consequently are not so likely to be well grounded.

EDUCATIONAL INSTITUTE OF N. B.

MESSRS. EDITORS:

The advertisement in this issue of the REVIEW contains information of the time and place appointed for the approaching meeting of the Provincial Institute. In view of the large attendance last June, and the unusually pleasing character of the proceedings, it is expected that, both in numbers and interest, the gathering in this jubilee year will surpass the most of those heretofore held.

The executive committee has arranged the following

PROGRAMME.

TUESDAY AFTERNOON: Enrolment. Routine business.

TUESDAY EVENING: Public educational meeting. Short speeches.

WEDNESDAY MORNING: (1) *School inspection—its place and importance*; discussion opened by Inspector Mersereau. (2) *School sanitation*—introduced by the Chief Superintendent.

WEDNESDAY AFTERNOON: A. Common school section. (1) *How should English be taught in ungraded schools, and in the first six standards of graded schools?*—discussion opened by Mr. James Barry, Miss E. McLachlan and Miss Grace Murphy. (2) *Domestic economy in schools*—discussion opened by Mrs. M. M. Carr.

B. Grammar and superior school section. Reports of special committees on courses of instruction.

WEDNESDAY EVENING: Observations on *the educational exhibit of New Brunswick* at the Indian and Colonial Exhibition of 1886—by Messrs. E. Mullin, M. A., Jno. March, M. A., and G. R. Parkin, M. A.

THURSDAY MORNING: (1) Report of Grammar and Superior school section. (2) *The teaching of agriculture in the public schools*—discussion opened by Mr. S. C. Wilbur, B. A.

THURSDAY AFTERNOON: (1) *Scientific instruction in schools*—discussion opened by Mr. John Brittain. (2) *The principles of good reading* (with illustrations)—address by Prof. J. Burwash, M. A. (3) Election of executive committee.

THURSDAY EVENING: (1) General business. (2) *Conversazione.*

There will be good music at the evening sessions, as usual.

As Professors in the University, and all school officers—as trustees and their secretaries are—equally eligible with teachers, for membership in the Educational Institute, and as the work of several sessions, at least, will be of a character to interest such persons, it is hoped that many of them will be present.

It is probable that there will be brought before the Institute a proposal from the executive committee of the Provincial Educational Association of Nova Scotia, for the holding of a central educational meeting for the Maritime Provinces in 1888. Out of this may grow a permanent inter-provincial conference of teachers, meeting perhaps in alternate years with the Provincial bodies. Such an arrangement would obviously afford many advantages.

HERBERT C. CREED,
Sec. to Educ. Inst.

For the Educational Review.]

Educational Advantages for Girls in the Maritime Provinces.

In view of the great progress that has been made during the last few years in the matter of education for women, it is important to inquire what position is taken in this regard by the educational institutions of the Maritime Provinces.

The question of the higher education of women is no longer a disputed one, and the last half century has witnessed a great awakening both on the part of women themselves, and the foremost educators of our time, as regards the capabilities and needs of women in the matter of education.

In the United States more than half the colleges admit women equally with men, and the number is constantly increasing; while in Europe co-education is receiving more and more attention every year.

London University with its two thousand students, one third of whom are women, confers degrees upon the latter the same as upon the male students.

In Paris, the Faculty of Science and Letters has conferred degrees upon one hundred and thirteen women.

In 1876 the King of Italy opened all the universities of that country to women, and they are now to be found as students in the colleges at Turin, Padua, Bologna, Rome, and elsewhere. So it is in Switzerland, Germany, Scandinavia, and Denmark, which opened the University of Copenhagen to women in 1883. Indeed the women of these northern latitudes are rapidly progressing in the matter of education, and it is said that the "women of Scandinavia are among the best educated in the world." The degree of Doctor of Philosophy was taken a few years ago by a lady at the University of Upsala in Sweden.

Victor Hugo has said that the "nineteenth century is woman's century," and, since education is the essential basis of all true progress, there is every reason to be assured that this prophecy is being fulfilled.

Upon inquiry into the attitude of the various institutions of learning in Nova Scotia, New Brunswick, and Prince Edward Island, with regard to this question, it is gratifying to find that these Provinces are no whit behind the leading nations of the world in recognizing the claim of women to full educational advantages, and in almost all the colleges and universities of these Provinces there exists no distinction on account of sex.

Dalhousie College, in Halifax, has for five years admitted ladies on exactly the same footing as male students, and of the five ladies who have been graduated there every one came off with honors, three winning the degree of B. A., one that of B. Sc., and one that of B. L. But beside these there have been about one hundred ladies who have taken special courses not leading to degrees. And in examinations in mathematics, philosophy, logic, political economy, history, English literature, and modern languages, the ladies have been first, and many of them are now to be found holding fellowships in the halls of learning in the neighboring Republic, while others are leaders in the didactic profession in these Provinces and in missionary lands. Beside those winning degrees, Miss Ritchie won distinction in philosophy, and Miss Stewart in mathematics.

There will be still further opportunities for collegiate training for young women afforded by the Ladies' College, of Halifax, which will be opened in September by the Presbyterian denomination. Connected with this college there will also be a preparatory department for students not far enough advanced to enter upon the collegiate course.

Pictou Academy is also co-educational, and furnishes an excellent curriculum extending over a four years' course.

Numbers of young ladies have been graduated from Acadia College, at Wolfville, which furnishes a fine preparatory department in the Acadia Seminary.

New Brunswick also offers the best advantages to women, both at Sackville and at the University of New Brunswick. Superior opportunities of education have always been afforded by Sackville College, which from its foundation has been open to ladies, and there have been numerous instances in which they have been graduated with honors. The first lady graduate in the Maritime Provinces was Miss Stewart, who claims Sackville as her *alma mater;* and Miss Narraway, of the same college, who graduated a few years ago, came off with high honors, being first in the graduating class. Miss Narraway also took the Grammar School License, and received the Lansdowne Medal, and, though still quite young, is filling the position of Chief Preceptress in the Wesleyan College, at St. John's, Newfoundland.

In the case of the University of New Brunswick it is, of course, too soon to pronounce judgment, as it has been so recently opened to women. The young lady who matriculated last year entered third in the class and is making good progress. In Fredericton there is a collegiate school, preparatory to the University, but in St. John such a school is not necessary, since the Young Ladies' High School offers sufficient training for entering the University. The fact was demonstrated a year ago when nine young ladies, who had been instructed in the St. John High School, passed successfully the matriculation examination, though without any direct intention of entering the University.

These students had not undergone special training for the matriculation examination. They were not selected pupils, but were taken as an entire class to test the character of the work done in the higher schools. The result was entirely reassuring on that ground, and reflects great credit both upon the school system and upon the teachers in those grades.

Prince of Wales College, in Prince Edward Island, is also open to women, and the names of sixty-six ladies are on the list of students for last year, and very favorable reports are given of the character of the work done.

In view of all these facts it is certainly no fault of the powers that be if the girls of the Maritime Provinces do not show a great advancement in education in the future. There are now no hindrances to their progress, and it only remains for parents to direct their daughters in the pursuit of knowledge and encourage them to take advantage of their opportunities. There is no longer any need for parents to send their daughters from home to be educated. Our own institutions offer as good advantages as can be found elsewhere, and our own people should show their appreciation of these advantages by encouraging their children to remain at home and patronize cur own schools and colleges.

When it is more generally acknowledged that education and enlarged interests can alone render girls less frivolous, we shall see greater numbers devoting their time to those studies and pursuits which have this influence; we shall see more of them in all our schools and colleges, and there will cease to exist any prejudice against the higher education of women.

St. John, N B. F.

For the EDUCATIONAL REVIEW.]

SCHOOL SYSTEM OF NEWFOUNDLAND.

Newfoundland makes the proud boast of being the oldest colony of the British Empire, but her educational advance has not kept pace with that in the newer colonies. While New Brunswick, Nova Scotia and Prince Edward Island have for many years been in the van in regard to their school systems, and while from year to year they are perfecting their free public unsectarian method of education, which they were wise enough to prefer many years ago, Newfoundland has distinguished herself by the establishment of a purely sectarian school system. Up to about ten years ago Protestants were united among themselves, but the Roman Catholics refused to unite with them, and the schools fell into two classes, viz.: Protestant and Catholic. At that time in consequence of jealousies among Protestants, in regard to the appointments of teachers and the management of the Government grants, the system was made more thoroughly sectarian. The public grant for educational purposes was divided up among Catholics, Episcopalians, Methodists, Presbyterians and Congregationalists in proportion to the numbers of each denomination. The denominations have since that date had the control of their own schools. The Government appoints three superintendents of education, a Catholic, an Episcopalian and a Methodist, each of which has oversight of the schools of his own denomination, and, by arrangement, of the few schools of the minor denominations. Each of these principal sects has its college, its training academy, and its primary schools. The Government grant only partially supports the system; school fees have to be charged, and the system is wrought out on strictly denominational lines.

There are to be found men who try to defend the system as the best for Newfoundland. Among these are principally the three well-paid superintendents of education. But a very slight acquaintance with the working of the system shows it to be most defective, and the more one knows of its results, the more disappointing they are seen to be.

A residence of eight years in St. John's enables me to say that the results of the system are "evil and evil continually." I cannot in this short article give at length the reasons for my opinion, but they may be briefly stated as follows:

1. The system is *most expensive*, the threefold superintendency, threefold academy course, and primary schools, involving at least three times the cost of an equally efficient public free school system.

2. The system is *most inefficient*. The necessity of erecting so many school buildings and paying so many teachers and officers, eats up the money that ought to go to secure a better class of schools and a higher grade of teachers.

3. Teachers are consequently cheap men—men who cannot afford to educate themselves, and who are contented to eke out a precarious existence on a starvation allowance.

4. Whilst primary education is fairly good in large centres, it becomes defective and in some cases impossible, where the denominations are separately too weak to raise their share of school expenses.

5. There are many localities unable to keep a school open more than a few months in the year; others are without a teacher for years together.

6. Whilst primary education is thus defective, and to many of the children practically impossible, higher schools and academies are crippled. Though the churches are making herculean efforts to erect and furnish their separate colleges, the proportion of

youths who ever get more than the merest smattering of education is extremely small. An academy with a staff of half a dozen teachers or less, publishes a syllabus of subjects taught that would eclipse a university with its staff of thirty professors.

7. The public schools instead of being seminaries of patriotic and liberal sentiment, become sectarian centres, the children of one sect being taught from infancy to look with jealous and unfriendly eye upon those of another sect. The seeds of bigotry and narrowness of view are implanted at an early age, which the teachers of religion and patriotism find their efforts vain to uproot.

8. The utter failure of the old, cumbrous, expensive system, in this age when the schoolmaster is supposed to be abroad, is evidenced by the fact brought out by the recent census, that in a population of less than 200,000 over 50,000 above ten years of age were to be found who could neither read nor write.

Newfoundland has many attractions as a place in which to live. It has a very moderate and temperate climate, is comparatively free from fogs on land, being much maligned in this respect. It has a population second to none in natural ability, the sturdy descendants of good English, Irish and Scotch stock. Its mercantile classes are solid and substantial; men of public spirit and with the good of their adopted home at heart; and though much fettered by a wretched supply system that has been inherited from the past, they are foremost in public affairs, one of them, Sir Robert Thorburn, being at present Premier and recently knighted by the Queen. Its fishing population, the "bone and sinew" of the country, hardy, enterprising and worthy of a better fate. But with all the many advantages and resources of the country—piscatorial, mineral, agricultural and human—the place is, for want of education, at least fifty years behind the age. What Newfoundland wants most is a system of education such as we have in New Brunswick, where the sons and daughters of the poorest can get without money and without price as good a common school education as the children of the millionaire. The government that shall have the courage to abolish two of the superintendencies, amalgamate all the colleges into one university and training school, and pass a free unsectarian school act for the colony will deserve well of all future generations of Newfoundlanders. L. G. M.

St. John, N. B.

CHILDREN should be early taught to see correctly, think clearly, speak accurately, to give close attention and render prompt and willing obedience. Bad habits are easily formed, but are with difficulty corrected.

For the EDUCATIONAL REVIEW.]

EDUCATIONAL CONVENTION.

Let us have a convention of teachers of the Maritime Provinces. Why should we not? In these days of rapid and cheap travel neither the distance from all parts of these Provinces to a suitable central point, nor the expense attending such a trip, is a serious objection. The teachers of the United States meet annually in convention at places as widely distant as Maine and Colorado. This year hundreds of them from the eastern, middle and southern States will meet their western brethren at Chicago.

Why should we have such a convention? Because we want to know our fellow-laborers in Nova Scotia and in the "Gem of the Gulf;" because we may learn much from each other; because our conditions of secondary and primary education and our provisions for the training of teachers are essentially similar; because we feel that we have held aloof from each other too long and we want to break down any unnatural barriers, if such exist, which have hitherto separated us from our co-workers in the adjoining Provinces, and because the spirit of the times in which we live leads those who may be doing the same work to associate in representative gatherings for mutual helpfulness.

The opinion of the Educational Institute of New Brunswick will be taken at its next meeting as to the desirability and practicability of holding a conference of the teachers of the Maritime Provinces in 1888, and a committee could be appointed, if desired, to co-operate with similar committees of the Nova Scotia and Prince Edward Island bodies, to arrange the details of time, place and programme. Will our brethren in the sister provinces take the same or similar action at the approaching meetings of their associations or institutes? E. M.

Fredericton, N. B

SPECIAL ANNOUNCEMENT.

We want 2,000 subscribers by the first of next month. Can any of our teachers afford to be without a good educational journal devoted especially to their interests, when it can be had for about *eight cents a month*, or one dollar a year? The REVIEW cannot be sent to any one without it is ordered. So that intending subscribers will see the necessity of filling out the blank order enclosed with this paper and returning to us at once, accompanied with the amount of subscription—one dollar. All money letter should be registered. If not convenient to remit the money at once, order the paper, and send the money at the first convenient opportunity. Write the address plainly.

All subscriptions will be acknowledged by postal card. Address, EDUCATIONAL REVIEW,
St. John, N. B.

☞ The attention of Principals of County Academies and other High Schools in Nova Scotia is particularly directed to the following.—

MATRICULATION STANDARDS IN CLASSICS, ADOPTED BY THE COLLEGES OF NOVA SCOTIA,

and Prescribed by the Council of Public Instruction as a Course of Classical Reading for County Academies and High Schools.

FOR 1887.

LATIN SUBJECTS: Cæsar, *De Bel, Gall.* Book I. Ovid, as for 1886. (Acadia College will also require Cicero's *Pro M. Marcello.*)

GREEK SUBJECT: Xenophon, *Anabasis.* Book II. (Dalhousie College will also require for "Munro Exhibitions and Bursaries," Xenophon, *Anabasis*, Book III.)

PROSE COMPOSITION: *Latin.*—Smith's *Principia Latina*, Part IV. Chapters I XXXV. (or Arnold's *Latin Prose Composition* through the Passive Voice).

Greek.—The rendering into Greek of simple English sentences such as are found in the English Greek Exercises in Smith's *Initia Græca*, Part I.

FOR 1888.

LATIN SUBJECTS: Cæsar, *De Bell, Gall.* Book I. Virgil, *Æneid.* Book I. (Acadia College will also require Cicero's *Second Philippic.*)

GREEK SUBJECTS:

Xenophon, *Anabasis.* Book III. (King's and Dalhousie for "Munro Exhibitions and Bursaries," will also require Xenophon's *Symposium*—edition published by John Allyn, Boston.)

PROSE COMPOSITION: As for 1887.

FOR 1889.

LATIN SUBJECTS: Virgil, *Æneid.* Book I. Cæsar, *De Bell Gall.* Books II and III. (Acadia College will also require Cicero's *Second Philippic.*)

GREEK SUBJECTS:

Xenophon, *Symposium.* (King's and Dalhousie for "Munro Exhibitions and Bursaries," will also require Xenophon, *Anabasis.* Book IV.)

PROSE COMPOSITION: As for 1887.

PROVINCIAL EDUCATIONAL ASSOCIATION OF NOVA SCOTIA.

The eighth annual meeting of the Provincial Educational Association, will be held in Assembly Hall, of the Normal School, Truro, on Wednesday and Thursday, 13th and 14th July.

Papers will be read by

Rev. A. W. Sawyer, D.D., President of Acadia College, on "The Register as an Index of the Teacher's Success."

Prof. Chas. G. D. Roberts, A. M., of King's College, on "The Teaching of English."

Prof. Burwash, A. M., of Mt. Allison College, Sackville, N. B., Subject to be announced.

P. O'Hearn, Esq., Principal of St. Patrick's High School, Halifax, on "Economy in Education."

E. M. Chesley, Esq., A. M., on "Spiritual Science as related to Physical Science."

Miss A. G. Jackson, on "The Advantage of Skilled over Unskilled Labor."

Further particulars will appear in the Report of Proceedings of last meeting of Association, to be issued later.

In behalf of Executive Committee.

ALEX. MCKAY,
Secretary.

Halifax, April 30th, 1887.

TO TEACHERS AND SCHOLARS.

Every teacher and scholar in the schools of New Brunswick should be provided with Waterproof Garments, as there is not any more fruitful source of sickness than sitting in wet or damp clothing.

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S. P. C. A.

THE LADIES EDUCATIONAL AUXILIARY COMMITTEE, together with the BOARD OF MANAGEMENT of the NEW BRUNSWICK Society for the PREVENTION of CRUELTY to ANIMALS, desire to draw the thoughtful attention of the teachers of all the Public Schools, and the superintendents and teachers of Sunday-schools, (of all denominations), to the BAND OF MERCY movement in connection with their work.

The object is to inculcate into the minds of the young the need and importance of kindness to God's dumb and dependent creatures. A beautiful badge of membership in yellow (guinea gold coloured) metal, mounted on garnet silk, with pin attachment, and designed by HER MAJESTY THE QUEEN, is issued to members only (at cost price (seven cents).

For the pleasure it will afford the children, and the good it must accomplish, organize a Band in your school. Write for reading matter and book of information, "How to Form a Band," sent post free on application to Miss F. M. Smith, Secretary of Auxiliary Committee, Carleton Street, St. John, N. B.

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WILLIAM CRAWFORD.

SUMMER SCHOOL OF SCIENCE, Wolfville, N. S.

July 25th to August 5th, 1887.

THE Programme of the SUMMER SCHOOL OF SCIENCE has been prepared with special reference to the preparation of Teachers for the teaching of the *Lessons on Nature* in the prescribed course of study.

To obtain suitable illustrations for the various lectures, excursions will be made taking in Horton Bluff, Beech Hill, Gaspereaux Valley and Blomidon. These delightful rambles in localities renowned for their charming scenery, and the necessity for a more general diffusion of scientific information, will doubtless lead many of our more progressive teachers to avail themselves of the advantages offered by the school.

Programme:

ZOOLOGY.

By A. H. MacKay, B.A., B.Sc., F.S.Sc., Pictou.

LECTURES—1: On the observation, collection, and classification of animal forms—introductory to general work. 2: The Protozoa, Coelenterata, Echinodermata, and Mollusca, with dissection of a "local mollusc." 3: The Annulosa and Arthropoda—class Crustacea with dissection of a lobster. 4: The Arthropoda—class Insecta with dissection of a "grasshopper." 5: The orders of Insecta with a special reference to species affecting the industries of Nova Scotia. 6: The Vertebrate structure illustrated by the dissection of a "frog." 7: Nova Scotia Vertebrata.

Text books recommended, "Handbook of Zoology," by Sir William Dawson, (Dawson Bros., Montreal, $1.25;) and "Practical Zoology" by Colton, (D. C. Heath & Co.. Boston, $1)

Each Student should be provided with a lens, and a dissecting knife (a good sharp pocket knife will do), a small pair of forceps and scissors, also insect nets, mounting boxes, pins, etc. (Some of these may be prepared at the School).

MINERALOGY.

By A. J. Pineo, A.B., Kentville.

LECTURES—1: Introduction—Crystallization: examination and description of minerals; specimens required, Pyrite, Quartz, Limonite, Gypsum, Feldspar, Steatite. 2: Principal characteristics of Minerals. 3: Classification of Minerals. 4: On the Determination of Minerals—use of the blow pipe. 5: Useful Minerals of Nova Scotia; specimens required, Chalcopyrite, Galenite, Hematite, Siderite, Pyrolusite, Stibnite, Gypsum, Calcite, Barite. 6: The varieties of Quartz, Pyroxene and Amphibole. 7: Mica, Feldspar, and the Zeolites. 8: On Rocks.

Text book, "Common Minerals and Rocks," (D. C. Heath & Co., Boston, 60c)

Each Student should provide himself with the mineral specimens required, a blowpipe, small steel chisel, and a hammer. Best reference book, Dana's Manual of Mineralogy and Lithology.

BOTANY.

By E. J. Lay, Esq., Inspector of Schools, Amherst.

LECTURES.—1: Analysis of a few such plants as can be easily obtained, such as Ranunculus repens, Taraxacum dens-leonis, Lysimachia stricta, etc. 2: The relations of the parts of the flower. 3: How to use the Key to the Orders. 4: A few of the principal orders of Nova Scotia Plants descriminated. 5: Nova Scotia Trees. 6. Cryptogamous Plants—a dozen of the more important, named and labelled.

Text book, "How Plants Grow," Asa Gray, (Mackinlay & Co., Halifax, 80c.)

Each student should have a pocket lens, forceps, a knife-trowel, a supply of blotting-paper, and a tin box to preserve specimens until they are examined.

CHEMISTRY.

By Prof. F. H. Eaton, A. M., Normal School

LECTURES—1 and 2: To illustrate and explain how much chemical knowledge can be taught with the simplest apparatus. 3 and 4: To familiarize students with the use of such terms as "acid," "base," "salt," "chemical equations," "atomicity," "quantivalence" and chemical nomenclature.

PHYSICS.

Same Lecturer and Plan as in Chemistry.

Text books, Chemistry and Physics Primers.

URANOLOGY.

By Prof. A. E. Coldwell, A. M., Acadia College.

Out-door demonstrations; the use of star-maps; precession of the equinoxes, parallax, right ascension, declination, etc.

PHYSIOLOGY.

By Prof. H. W. Smith, B. Sc., Normal School.

LECTURES—1: Human anatomy. 2: Minute structure of the tissues. 3: Physiology of Nutrition and Respiration. 4: Structure of the Brain and Nervous System, and its bearing upon Psychology and mental development.

NOTE.—Circumstances may require some modifications to be made in this programme. It was thought by some members of the Science Committee that it would be a mistake to crowd much work into the first year's course. For this reason, partly, Geology is omitted, although it is hoped that the Lecturer on Mineralogy will not lose sight of so important a subject.

Students are expected to send in their names to the various lecturers AS SOON AS POSSIBLE, in order that they may be able to make provision for suitable material, etc.

As Acadia College will be placed at the disposal of the School, the opportunities for improvement will be exceptionally good.

For further particulars apply to H. S. Congdon, Principal of the Dartmouth schools, or to the Lecturers.

* * *

DETAILED PROGRAMME.

HOURS FOR LECTURES.

Monday—20½–21½, Opening Address by the President.

Tuesday—8–9, Mineralogy; 9–10, Chemistry; 10–11, Zoology; 12:19, to 19:47 excursion to Horton Bluff; 21–22, Uranology.

Wednesday—8–9, Botany; 9–10, Mineralogy; 10–11, Chemistry; 11–12, Zoology; 15–17*; 19–20, Uranology

Thursday—8–9, Mineralogy; 9–10*; 10:52–18:08, excursion to Kentville; 19–20, Chemistry; 20–21, Botany; 21–22, Uranology.

Friday—8–9, Botany; 9–10, Mineralogy; 10–11, Chemistry; 11–12, Zoology; 15–16*; 16–17, Physics; 20–21, Uranology.

Saturday—8–9, Mineralogy; 9–10*; 10–11, Zoology; half holiday.

Monday—8–9, Botany; 9–10, Mineralogy; 10–11, Physiology; 11–12, Zoology; afternoon on way to Blomidon.

Tuesday—Visit Blomidon, collect Trap Minerals, rare Plants, etc.

Wednesday—8–9, Botany; 9–10, Mineralogy; 10–11*; 11–12, Zoology; 15–16, Physics; 16–17, Physiology.

Thursday—8–9, Botany; 9–10*; 10–11, Physics; 11–12, Physiology; afternoon, Excursion; evening, Public Lectures.

Friday—8–9, Botany; 9–10, Mineralogy; 10–11*; 11–12, Zoology; 12–13, Physiology.

* During these hours some attention may be given to local Geology with the help of Prof. Coldwell, or to an extension of the Physics, Chemistry and Physiology, as the Lecturers on these subjects have scarcely time to do justice to their topics.

ALEXANDER McKAY, on behalf of the Programme Com.

The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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A. H. MacKAY, B. A., B. Sc.,
Editor for Nova Scotia.

PRINCIPAL ANDERSON,
Editor for P. E. Island.

G. U. HAY, Ph. B.,
Editor for New Brunswick.

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☞ For further particulars see *Special Announcement*, page 35.

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OUR PROSPECTS.

TO THIS issue of the REVIEW four extra pages are added, making in all twenty-eight pages. This enlargement is made for a double reason: to accommodate our advertisers, who refuse just yet to be confined to the limit of four pages; and to make room for the article on "Thinking in Shape and Pictorial Teaching," by the Rev. Edward Thring, of England, to which Mr. Parkin has contributed an introduction. The marked attention this address has received on both sides of the Atlantic justify us in re-publishing it in full, as one of the most valuable contributions to educational literature that has appeared in recent years.

The strong financial support which has been already extended to the REVIEW, the many flattering expressions of approval with which the first issue has been greeted, are most gratifying, and assure its permanence. We should like to publish some of the complimentary notices of the press, and the letters from friends throughout the Atlantic Provinces, as well as from western Canada and the United States, cordially welcoming the REVIEW, but at present there are too many demands on our space to yield to the temptation. We take this opportunity to thank our friends for what they have said and done in appreciation of our efforts to establish a first-class educational journal. The Educational Institute of New Brunswick, at its recent meeting, determined that the publication should not be strangled in infancy. A resolution was passed cordially endorsing the paper, and recommending it to the teachers of the Province; it was greeted with warm words of encouragement, and its members promptly supplied the sinews of war to tide the paper over a critical period in its growth. We are assured that the Educational Association of Nova Scotia, which meets at Truro this week, will greet it in the same tangible way, and that other educational institutes, local and general, will extend to it an encouraging hand.

We believe that this substantial recognition of the REVIEW springs from a sympathy with the objects which it has in view: Criticism of worn out or exploded educational theories; newer and more advanced methods of teaching; a fair and impartial examination of the administration of our educational systems; a plea for the adoption of a system of industrial education; better and fresher methods of teaching the subjects of natural science required in the public schools; and in a multitude of ways to assist the teacher and make the REVIEW a power in the schoolroom. "Your article No. 1, of the Ferndale School Series, was worth the price of a year's subscription," says an enthusiastic friend. "Your article on Industrial Education struck a note that should resound throughout the length and breadth of these Provinces," says another. The editors of the REVIEW are practical teachers. They are earnest in their calling, and have chosen it for their life work. With the assistance and co-operation of zealous and experienced teachers they hope to make the paper a power in our educational progress.

VICTORIA SCHOOL OF ART AND DESIGN.

Halifax city is commemorating the Queen's Jubilee in the permanent, as well as the evanescent fashion. A school of art and design has not only been proposed, but is already far on in the way of successful realization. The people have subscribed, at the time of writing, $4,000; the city council have granted $3,000 of the Jubilee funds, as an endowment; and the Provincial government have voted $800 a year. While Halifax city will realize more immediately and fully the benefits of such an institution, the Province as a whole will ultimately be benefited. It is, therefore, justifiably expected that the intelligent public throughout the country will assist in raising the total endowment to at least $22,000, the amount which the committee reports as a minimum for a satisfactory financial basis.

Foremost in the advocacy of this school, was Mrs. Leonowens, of Halifax. She has addressed a very effective letter on the subject to the teachers of Nova Scotia. We would extend the appeal to the patrons of education especially. The teachers, with the exception of a few of the most hardy, must, in commercial language, endeavor to supply the demand. If the demand be for an education which will best fit the citizen to make use of all the material nature has placed at his hand, that education will be given. This material is more varied and abundant than the patrons of our old systems of instruction seem to have imagined. For instance, it exists not only in the potentiality of the human hand to illuminate a ledger with script, in lines of beauty, but in the less developed powers of limning new creations in decorative, of representing mechanical constructions, or of executing industrial manipulations which may multiply the value of the raw products of our country hundreds of times, and convert a village of miners into a metropolis of manufacture and wealth. Are we going to be simply diggers of coal, and purveyors of fish for the nations, or are we to rise to the level of our manhood and be master-workmen ourselves. Ignorance of the vast possibilities of a system of education lies at the root of our indifference. Only let our business men of every class and grade know what can be effected by a proper direction of the energies latent in the youth of a single generation, and they will arise in their might and demand reform. We have in our mind, of course, a wider spreading extent of reform than that alluded to in connection with this department. The chairman and secretary of the school have issued a circular, in which they give some strong points of information to the public. They note that such schools were first started in English-speaking countries, through the efforts of the late Prince Consort; that they were originated in consequence of the striking inferiority of English manufactures, in skill and taste, as shown at the exhibition of 1851; that their utility has been such that 400 such schools exist at present in England; that, according to a German authority, since that time England made more rapid progress in industrial art than any European country; and, in fact, that there can be no supremacy in general manufacture, without a corresponding superiority in technical education, of which industrial drawing is the corner stone. This is the reason why drawing is made one of the subjects in the provincial course of study for our schools. But our teachers—how have they been taught? The Victoria School of Art and Design, combined with the instruction faithfully given in the Normal school, and in other intsitutions, will soon, we hope, supply our schools with teachers trained in the elements of industrial art. And to accelerate a consummation so devoutly to be wished, we trust the educational authorities may, by next year, add drawing to the syllabus of examination for every teacher's diploma. We congratulate Halifax on the intelligent position it has taken, on the success it has already attained, and trust that its spirit of progress may be communicated to the whole country, and be reinforced in communication.

N. B. EDUCATIONAL INSTITUTE.

The tenth annual meeting of the Educational Institute of New Brunswick opened in St. John on the 28th of June, and its sessions were continued during the two following days. The attendance of teachers was large, and nearly all sections of the Province were represented. Chief Superintendent Crocket presided, and beside him on the platform, at many of the sessions of the Institute, were representative educationists of the Province: President Harrison and Dr. Bailey, of the New Brunswick University; President Inch, and Prof. Burwash, of Mount Allison University; with Hon. Senator Boyd, chairman of the Board of School Trustees of St. John, and others.

The proceedings generally were of a harmonious character; the papers thoughtful and suggestive; and the discussions of a very practical character. An interesting feature was the part taken by the ladies in the reading of papers and discussions. A little time was wasted by the Institute in rambling discussions, but the general desire seemed to be to carry out the programme with spirit and promptitude. It is a mistake, however, to provide too long a programme for such a gathering. Much benefit is derived from the discussion of papers, where important and practical suggestions may be brought out. Again, the propriety of crowding three sessions in one day, occupying some nine or ten hours, is questionable. Papers and discussions, containing much that is valuable, are lost, often because they fall upon listless ears, made so through sheer weariness. Let there be a reform in this respect. One important purpose of these Institutes—pleasant reunions of old friends, and the forming of new acquaintances—is not available if the time between nine in the morning and ten at night, is chiefly occupied in breathless attempts to read as many papers as possible.

The public meeting, held in the evening of the day on which the Institute opened, was largely attended, and the proceedings of an exceedingly pleasant character. The speakers were, His Honor, Lt. Governor Tilley, who gave an interesting retrospect of education in New Brunswick, especially in the cities of St. John and Portland, during the past fifty years. Dr. Stockton, M. P. P., made a strong plea for industrial education. Rev. L. G. MacNeill thought there should be more depth and height, and less breadth, in what is taught in our schools. Dr. Inch, of Mt. Allison, saw many hopeful signs of educational progress, not the least of which was the starting of an educational journal one year ago, which had developed into a periodical for the Maritime Provinces. Other speakers were, Dr. I. Allen Jack, Dr. Harrison, and Hon. Senator Boyd.

Wednesday morning's session was taken up with a somewhat vigorous discussion on the change of school terms in this Province, which seems to find very little favor among teachers. On Wednesday afternoon, Inspector Mersereau read a paper on School Inspection, its Place and Importance, in which he showed the value of co-operation and sympathy, between inspector and teacher. Mr. Jas. Barry introduced the subject, Teaching English in Schools, which clearly pointed out some of the faults of instruction in this subject, and gave some excellent suggestions how to remedy these defects. Miss Grace Murphy, of Portland, followed with an admirable paper on the same subject. One of the most interesting papers read at the Institute, was that by Miss Grace Orr, of the Victoria School, St. John, on Domestic Economy in Schools, which was illustrated by specimens of needle work from the lowest to the highest grades. The paper was valuable, as illustrating the practical work that is done in this school, and from the interesting manner in which the subject was dealt with. Good results should follow. On Wednesday evening Principal Mullin and Mr. John March gave an interesting account of the New Brunswick exhibit in London, last year. Mr. Geo. R. Parkin followed, giving his impressions of some aspects of education in England, which he had ample opportunity of observing.

On Thursday morning Chief Supt. Crocket read a valuable paper on School Sanitation, in which many important hints on ventilation, and the care of the health and eyesight of pupils, were given. At the afternoon session a practical and very suggestive paper on Scientific Instruction in Schools, was read by Mr. John Brittain, of Petitcodiac, which was ordered to be published in the EDUCATIONAL REVIEW. This was followed by an address by Dr. Bailey, on the same subject. Prof. Burwash read an excellent paper on the Principles of Good Reading, which were illustrated by many examples.

The committees appointed to revise the courses of instruction for Grammar and Superior schools, respectively, reported, recommending several changes in the courses. These revised courses were ordered to be published in the EDUCATIONAL REVIEW, in order that the changes proposed may come fully under the notice of teachers, prior to their discussion at the Institute next year.

The following were elected members of the executive committee: S. C. Wilbur, G. R. Parkin, P. Cox, W. B. Jonah, J. M. Palmer, F. H. Hayes, H. V. B. Brydges, J. S. Harrison, P. G. McFarlane, and S. A. McLeod.

A very enjoyable conversazione was held at the close of the Institute, presided over by Senator Boyd. Ice cream was served. Music, readings, and recitations made up the remainder of the programme, which was a very enjoyable one.

ITS SEEMS to us, that amid all the advance in education, we should not lose sight of the fact that a sound and thorough training in the three R.'s is indispensable. To teach pupils to read with distinct utterance and a proper inflection, with a competent knowledge of the words used; to teach them to write plainly; and to teach them to add correctly and rapidly, columns of figures, with an accurate knowledge of vulgar and decimal fractions, proportion, interest, and discount, is of the very first importance, A pupil thus equipped at the age of 14 or 15 has a good start in the world. The state makes provision for such training; it pays for it; it has a right to expect that a thorough foundation in these practical subjects shall be secured. If a boy or girl has a smattering of many things, without these few things learned well, the state has not got its rights.

N. S. EDUCATIONAL ASSOCIATION.

The eighth annual convention of the Provincial Educational Association, of Nova Scotia, meets in Truro on the 13th and 14th of this month. There are names on the programme which assure an interesting and valuable meeting. Eminent teachers, who have already won the recognition of all classes as successful men, will discuss important subjects, and at the same time unconsciously reveal some points of character and manner which contributed to their success. The yet unknown pedagogue, from some obscure section, will carefully decipher the hieroglyphics of genius thus displayed, and start to track the footsteps in the sands of time. He will throw down a mixed up case of school technics for his compeers to unravel, or perhaps measure ferules with a kindred spirit, or tilt against a windmill. Maybe he will only patiently observe, mentally criticise, and good-naturedly enjoy the wit, the wisdom, and the waggery of the scene. In any case, he leaves the convention a lighter, a wiser, and a smoother man. For some years back the attendance at this convention has been steadily increasing, so that at present the ample accommodations of the new Normal School buildings show symptoms of becoming strained. Nothing can be a surer index of the increasing interest teachers take in the intelligent exercise of a profession which each year is taking a higher place in the estimation of the people.

N. B. SUMMER SCHOOL OF SCIENCE.

The New Brunswick Summer School of Science opened at the Natural History Society's rooms in St. John on Friday morning, July 1st, and continued its sessions until Friday evening, July 8th. The attendance averaged about twenty-five, most of whom were teachers. The interest manifested in the work increased daily, and was most gratifying to those who had charge of the classes. A genuine enthusiasm was awakened in natural science studies, which must produce good results in the schools of those teachers who took advantage of the course. The short time that the school was in session of course prevented anything like thorough or extended work being done in one subject, but an interest was aroused, habits of closer observation formed, and a desire implanted in the members of the school to study intelligently *objects* of natural history. One of the pleasant features of the school was the thorough devotion to the work and the sympathy that existed between teachers and pupils. It is safe to say that the work accomplished this season will lead to the formation of a school on a more advanced and extended scale next summer.

We regret that the demands made on our space this issue prevent the publication of a full report of the work done at the school. We may allude to some of these special features in future. Three excursions were made by the school—one to Lawlor's Lake, a second to Meogone Island, and a third to the Fern Ledges on Lancaster Beach—all within easy reach of St. John, and places of considerable interest to the student in natural science. Four days were given to laboratory work, and the eager attention given to this important department of the school showed that its value was appreciated. As far as possible, this laboratory work preceded the lectures,, more especially in zoology. Six lectures were given by Mr. W. F. Ganong on this subject, in which details of structure,, beginning at the lower forms and gradually proceeding to the higher, were given. In this course, Mr. Chamberlain gave instruction in the structure, habits, and classification of birds. Mr. G. F. Matthew gave a series of seven lectures on geology, beginning with modern depositions, and gradually proceeding to the earlier formations. The interesting geological features of St. John and vicinity, especially at Lawlor's Lake and the Fern Ledges, rendered these lectures and examinations of structure of great interest and value. A lecture was also delivered by Dr. Bailey on the geology of southern New Brunswick. This was given from a romantic spot on the summit of a hill in the vicinity of Lawlor's Lake—a wide extent of country on all sides, presenting illustrations from nature on a grand and beautiful scale. Mr. G. U. Hay gave a series of lectures on botany, showing the principal features of the different groups of plants from the lower forms upwards, with structure, especially of the higher forms. Specimens from five families of plants were analyzed, Mr. Brittain assisting in the laboratory work. Two evenings were devoted to astronomy, in which Mr. H. C. Creed gave lectures and directed telescopic views.

The New Brunswick Natnral History Society, which generously opened its lecture rooms and museum for the benefit of the school, showed its desire to share in educational development. The cordial address with which its president, Dr. Botsford, opened the school, indicated the work in which the Society and our educational institutions might profitably share.

It cannot be denied that the English language is shockingly spelled.—*James Headley, LL. D., late professor of Greek in York College.*

THE UNIVERSITY OF NEW BRUNSWICK.

To the old graduates of this University, and to all who take an interest in higher education, the last encœnia of this institution was full of instruction and encouragement. As usual, the weather was beautiful and the attendance large. The proceedings opened with the oration on behalf of the Faculty, by Prof. Stockley. It was a scholarly production, and much appreciated. The address on behalf of the Alumni Society, by Mr. W. G. Gaunce, which took place after the presentation of prizes and honor certificates, and the conferring of degrees, closed the exercises. It was full of genuine enthusiasm, and well calculated to arouse an abiding interest in the welfare of the College.

It is clear that the Professors of the University of New Brunswick are thorough in their respective departments, and need not fear comparison with men from any other higher seat of learning in Canada.

This University created a demand for useful and honorable learning, and is supplying that demand, so much so that not a few young men have come to her halls, having first earned the means by which to avail themselves of the advantages afforded, and have gone away not disappointed, having done credit to themselves, better qualified to be a credit to the Province to which they owe so much; and to assert by the attainments of the mind and heart, the just claims of their alma mater to public respect and confidence.

PRINCE OF WALES COLLEGE AND NORMAL SCHOOL.

Recent papers received from Charlottetown give an account of the closing exercises in connection with this institution of learning. The year just closed has witnessed a large increase in the number of students in attendance, and still greater efficiency in its management. The careful training which students receive within its walls is well shown in the excellence of the teachers of P. E. Island schools, who are prepared here for their work, and in the admirable way in which the students sustain the reputation of their alma mater in competitive examinations abroad. No better evidence is needed to show the substantial and thorough character of the work done. At the closing exercises there were present His Honor Lt. Governor McDonald, Hon. D. Laird, D. Montgomery, Chief Superintendent of Education, and leading citizens of Charlottetown. In reading the reports of the speeches made on the occasion, we note with considerable surprise a remark made by Rev. Mr. Frame, to the effect that it was the first time he had ever met a member of the government at a Prince of Wales College examination, though the institution belonged to the Province. One of two conclusions is irresistible: That the reverend gentleman's visits must have been of the character of those commonly ascribed to angels; or that the members of the government do not show that interest and pride in their educational institution that its high character, both at home and abroad, entitles it to receive.

SCIENCE IN THE COMMON SCHOOL.

Often young teachers are afraid to start their pupils on natural science work, because they are afraid they may be asked questions which they cannot answer. A false pride always does mischief. Nobody knows everything; and a frank avowal of ignorance on any point will not cause the loss of respect of pupils for a teacher, unless it is plainly something which he should know, or something which he does not appear to be quite frank about.

A mistake often made, is that the teacher should know the names of all the minerals, plants, and animal forms of life which a pupil may find. By no means. If the teacher knows a few typical specimens by name he is doing well. But simply knowing the name, is knowing little more than nothing about the subject. A teacher without knowing a single scientific name of the specimens to be had in a school, may do work superior to a man whose head is a cyclopædia of names.

He can do it in this way. Cause a thorough examination of every point and quality to be made; and, when names are necessary, extemporise some temporary, suggestive name or catch phrase. If it is a mineral, the point is to find out every character which can be discovered by any means at your disposal or theirs. If a plant, compare its roots, stem, system of branching, leaves, flowers and fruits with those of other plants. Then dissect them, comparing their parts with the similar parts of these plants. Draw on the board, and make the pupils draw on the board, enlarged outlines of the forms of the various parts. No matter how rudely this drawing is done, everyone should be made to do it. It will develop accurate perception, memory of form, and the power of drawing. Do the same with animal forms. And, in addition, stimulate the observation of the various phases through which the plant or the insect may pass. All this can be done without any preliminary knowledge. Begin the study with your pupils. Let them know it. Both you yourself, and they themselves, will find in such work, not only profit, but a great deal of pleasure. The mutual pleasure may be even greater than if you commenced with an extensive stock of knowledge in natural science.

FERNDALE SCHOOL.

No. 2. A Beetle.

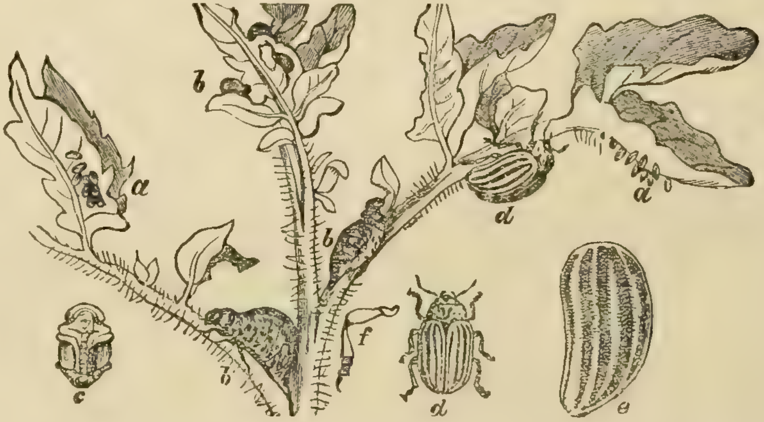
Teacher. How many of you have brought specimens of the Potato Beetle and its work, for to-day's lesson, as I asked you?

Ans. (*A number of hands raised.*)

T. Just let me see what you have.

Ans. (*A general display of potato branches from as many varieties of quaint and curious pasteboard boxes, etc.*)

T. Very good! You have specimens of the beetle between you all in nearly every stage. Let me take this branch and make a sketch of it on the board, as it appears to be the most complete specimen. Here it is.



Now, looking at your specimens, can you tell me what these dots are which I am putting on the leaves near *a* in the sketch?

Scholar. Eggs, I suppose.

T. And they are placed on the—

Chorus. Under side of the leaf.

T. Or on the—

Some Voices. Midrib.

T. Or on the—

A Voice. The stem.

T. Very good. What is the color?

Chorus. Orange.

T. How many in each cluster?

Voices. A few—nine—ten—over twenty—thirty-seven—fifty-four—sixty-five—seventy-eight.

T. That is, from ten to eighty, generally, is it not? They say that in warm weather a new cluster of eggs will hatch in about a week. Now, how many will undertake to watch a cluster on a growing potato plant, and report to me the exact number of days it takes, according to your observation?

Ans. (*A good show of hands.*)

T. When the eggs are hatched, a small, hunch-backed, dark red sort of a grub appears. What stage of the insect's life is this?

Chorus. The *larva.*

T. Where have I the *larvæ* sketched?

Chorus. At *b.*

T. Are they all the same size?

Scholar. No. The small ones are darker colored.

T. Correct. And as they grow older and bigger they become more—

Chorus. Light—orange—brightly colored.

T. And on their sides they have a double row of—

Chorus. Black dots.

T. Are these larvæ good feeders?

S. Yes. They have nearly stripped all the leaves off this branch.

T. What becomes of them after they have eaten for a long time? Do they gradually change to the *beetle* form?

S. I suppose from what you said about the *pupa* of the emperor moth, that they must have a pupa stage.

T. Right. You cannot so easily experiment on this stage. But perhaps some of you can. If we were to raise a whole potato plant and place it in a large jar, with plenty earth, and one of these young larvæ, after about three weeks feeding on the plant, the mature larva would descend deep into the earth and there change into the *pupa* stage, which I figure on the sketch at *c.* In less than two weeks in the warm summer it would then come forth the perfect *beetle,* which I have figured at *d.* Now, will some one tell me the time the insect has been found in the various stages?

S. In the egg stage, about *one* week. In the larva stage, about *three* weeks. In the pupa stage, about two weeks. Then, in the beetle stage—I don't know.

T. About three or four weeks, during which time the female beetle may deposit as many as five hundred eggs. How could you prove this?

S. Put a new beetle in the large jar with the potato plant, I suppose, and then see how long it will live, and count the eggs it deposits.

T. Now you all have beetles with you. Please examine them. What is the color?

S. A dull orange, with black lines—five on each side.

T. Lift up each side. You see they are only wing covers. I sketch one of them at *e.* What do you find under them?

S. Two fine, thin wings of a rosy color, and they are neatly folded up under the covers.

T. Yes, these are the true flying wings. The wing-covers, or sheaths, are found in all the beetle family. I may give you the proper name of this family. It is made up out of two Greek words, *coleos*, a sheath, and *ptera*, wings. Hence, the name of the family or order is *Coleoptera*—which just means the *sheath-winged*.

S. What is its scientific name?

T. Thomas Say discovered it in 1824 on the upper Missouri, and called it in his description, *Doryphora decem-lineata*. The first word means "*spear bearer*." The last one—the name of the species—means "*ten-lined*," from the five lines on each wing-sheath.

S. That was sixty-three years ago. How is it that we never heard of it long ago?

T. It was thirty-five years after Say discovered the insect that it began to acquire its bad reputation. About 1859 the cultivation of the potato extended with civilization away east as far as Nebraska. The potato in fact commenced to invade the beetle's country. The beetle, having all along lived on a miserable, wild sort of potato, called the sandburr, tasted the succulent cultivated potato, and immediately attacked it. They grew and multiplied on this fine food prodigiously, and began to march west for more room. They opened their wing-sheaths and flew on during the night. But whenever they could they took such conveyances as the railway and steamboat.

S. How could they?

T. Didn't you see the beetles crawling over everything—even across the roads. Suppose one to come against a car wheel resting at a station. It would soon climb to the upper wood work, and in a few hours might be carried a hundred miles to another station, where it might alight.

S. How fast did they come?

T. At an average of eighty miles per year. They entered New Brunswick in 1877, and Nova Scotia and Prince Edward Island, in force, in 1882. They grow, however, more rapidly in the warmer countries to the south of us. There they produce no less than three broods a year.

S. That is, one female in May might produce 500 eggs, and in from four to six weeks each of these would be a beetle?

T. Yes.

S. And, if one half of those were female, by July there would be 250 times 500 eggs deposited—that is 125,000.

T. Yes.

S. And by August or September these would make 62,500 pairs of beetles, each pair of which would produce 500 eggs.

T. Yes.

S. That is, one beetle in spring, in a warm country, would produce 31,250,000 beetles by the fall.

T. Perfectly correct. Over thirty millions. But as the beetle itself multiplied enormously when it found abundance of food in the cultivated potato, so do some insects which prey upon the beetle. So that just as the beetle tends to exterminate the potato by feeding upon it, so do the beetle's parasites by increasing in numbers tend to destroy it, and thus hold it in check.

S. What are these parasites?

T. There are over a half a dozen insignificant looking flies or insects known as terrible enemies of the beetle.

S. Is it right to call it the potato bug?

T. Bugs do not belong to the *Coleoptera*. They have not the *wing sheaths*, and are put in a family by themselves. Beetle is the proper term. Do you know how to fight the beetle?

S. Yes. By picking off and burning the insects and their eggs, or by dusting or sprinkling the potato plants with *Paris green*, which poisons the beetles. It is all explained in the posters of the agricultural society, and in some of the papers.

T. If one farmer in this community were not particular about destroying the beetle, and all the others were, what would be the result do you think?

S. That he would be raising a crop of beetles for next year, each one of which might produce millions in his neighbor's fields in one season.

T. What should be done with such a man?

Chorus. Why! his neighbors should look after him.

T. What points are in the farmer's favor at present?

Chorus. Summer not too hot—season not so long as in the South—increase of the beetle's parasites—the united action of the farmers in destroying them.

S. What if the beetles cannot be kept from increasing?

T. What do you think?

S. We could grow no potatoes.

T. Would that be a great misfortune?

S. I suppose so. But how great?

T. Count the number of acres under potato cultivation at present. Prince Edward Island, 40,000; New Brunswick, 50,000; Nova Scotia, 60,000. How many?

Chorus. 150,000 acres.

T. Correct. Count the number of bushels raised. P. E. I., 6,000,000; N. B., 7,000,000; N. S., 7,500,000. How many?

Chorus. 20,500,000 bushels.

T. You know the worth of a bushel of potatoes;

therefore you can find out the money loss to the country if the beetle should win. But if farmers never neglect a slight visitation of these, though they should be ever so few, they will not be troubled by myriads of them next season. Always destroy them, no matter how few they be, because under favorable circumstances one may soon become a million. Now what can you do?

Chorus. We can tell this to every farmer and every person in the school section.

THE VICTORIAN JUBILEE AND THE SCHOOLS.

In Halifax over 3,000 children were marched to the grassy slopes of the northern slope of the citadel, where they sang patriotic songs before a delighted audience of about 20,000 spectators.

In Pictou about 700 marched in procession, each school department headed by a banner with an appropriate motto, each male pupil and student with a banneret, and each female with a wreath. The procession, led by the band, marched from the new Academy through the town, formed on the Custom House Square, sang the "Empire Flag," when a royal salute of twenty-one guns was fired by the garrison artillery from the fort. Then an oration from Mayor Elliott, and God Save the Queen, the garrison artillery and band arriving in time to join in the closing stanza. The students of the Academy again distinguished themselves in the Polymorphian procession in the evening.

At North Sydney, C. B., a similar display was made. At Bridgewater, N. S., 300 children took part in the public procession. At Yarmouth, N. S., 1,000 is the number reported. At Springhill, N. S., 500. At Windsor, N. S., 300. At Amherst, 400.

We have not seen the number from other towns given. At Charlottetown, P. E. I., all the school children of the city were massed on a grand stand and addressed by the Lieut.-Governor.

The school demonstration in St. John in honor of the Queen's Jubilee on the 20th June was one well fitted to call forth enthusiasm. The children, to the number of nearly 4,000, assembled on King Square, where a platform was erected, from which addresses were given by His Honor Lieut.-Governor Tilley, His Worship Mayor Thorne, Senator Boyd, Dr. Silas Alward. Four bands of music enlivened the proceedings. The gaily-dressed, bright-faced children, the crowds of on-lookers, blocking up the thoroughfares leading to the square, the flowers and foliage, made a scene which will not soon be forgotten by those who were fortunate enough to witness it.

ENGLISH SPELLING CONDEMNED.

The present mode of English spelling has been tried before the tribunal of reason, and has been condemned.

It has been condemned by the unanimous voice of philologists, who declare that it distorts the facts, obstructs the study, and hinders the healthy growth of the language.

It has been condemned by teachers, who declare that it burdens the growing memory, deceives the growing reason, and dwarfs the growing understanding of the children, and makes of their teacher's efforts an enormous waste.

It has been condemned by economists, who declare that it causes every year in the total a loss of millions of days and millions of dollars, in the learning, teaching, writing and printing of superfluous letters.

It has been condemned by statesmen, who see in it the main cause which wraps more than one-tenth of our whole population in total, and nearly one-half in almost total illiteracy.

It has been condemned by Christian philanthropists, who see in the more than pagan darkness of English spelling, a hindrance greater than pagan resistance to the rapid spread of Christian civilization among the nations of the earth.

Science, history, education, literature, commerce, religion, morality, unite in condemning a system which defies science, belies history, obstructs education, hampers literature, hinders commerce and checks the growth of religion and morality—*Spelling.*

[This is a terrible indictment. It is made by responsible parties, however. It behoves our readers to examine it carefully—especially those who are responsible for the educational laws, whether of the State or the University. Fellow writers of the press, the only possible leaders of reform in these days, ventilate the question without a bias. The right will then prevail.—Ed.]

LEGISLATIVE ACTION IN PENNSYLVANIA.

The Legislature of Pennsylvania, at the session just ended, passed a joint resolution, introduced by Dr. James W. Walk, of Philadelphia, providing for the appointment by a Governor of a State commission, to examine and report upon the question of spelling and spelling reform in its relation to public education. Governor Beaver has signed the resolution, and will, we are informed, soon appoint the commissioners, whose names we hope to announce in our next.—*Spelling.*

A GREAT TEACHER.

I very gladly comply with the request of the editor of the EDUCATIONAL REVIEW to write a few lines about the head master of Uppingham School, Rev. Edward Thring, whose striking address to the Teachers' Guild of England is republished in the present number. I only hope that my few words of personal introduction may lead fellow-teachers to make themselves further acquainted with what he has written or said about the business of our lives.

Whether measured by vigor as an educational thinker, or by actual success in reducing his theories to practice in the great school of which he is the head, Mr. Thring may fairly be considered the first of living schoolmasters.

When I first met him in 1874, at the meeting of head masters at Winchester, England, he was introduced to me by Dr. Ridding, then head master of Winchester School, with the remark that "here is the man who can tell you more about education than any one else in England." The remark was made with all earnestness, and, I believe, with all truth. Since that time I have had the happiness and advantage of knowing him as my friend and revering him as my master, and after being in constant communication with him on educational subjects for so many years, I am satisfied that the remark of Dr. Ridding is even more true to-day than when he made it.

His two most important professional works are "School and Education," which deals chiefly with the ideal structure of a great public school, as that term is understood in England, and the "Theory and Practice of Teaching," a book which treats of the fundamental questions which arise in a teacher's life in a more vigorous and living way than any other I know of. These books have attracted much attention of late years in the United States as well as England. The Teacher's Association of Minnesota last year asked Mr. Thring to write them an address for their annual meeting, and the "Theory and Practice" was adopted as one of the books provided for the study of teachers in that state. A learned New York professor said to me a few days ago that the merit of Mr. Thring's writings, with which he was quite familiar, lay in the fact that they almost invariably "touched bottom." In these days of superficial disquisition on all subjects, no criticism could confer higher praise.

Of his work I can only speak here in the briefest way. Nine years at Eton, of which famous school he became captain, a distinguished course at King's College, Cambridge, where he was a Fellow; then work as an examiner at the universities and public schools, and subsequently, in connection with clerical duty, practice in teaching in parish schools, gave him acquaintance with almost every form of educational work. In 1854 he was appointed head master of Uppingham, then a small and struggling county grammar school. How he has lifted it in his own lifetime into the very first rank of English public schools; how he has there embodied in brick and stone and mortar, principles of educational truth long overlooked; how he has made it an almost ideal place of training, where moral, intellectual and physical culture go hand in hand, aided by all the appliances of structural completeness, cannot be told here. I have tried to state the leading features of the school and the character of Mr. Thring's reforms in a paper which I have written for the "Century Magazine," and which will appear when the illustrations have been prepared. His governing idea is that justice should be done to each boy, clever or stupid; next to this that for the best work in training you must have the best tools. The results to which these leading ideas have guided him are of the deepest interest, and under their inspiration he has made a profound impression as to the conditions which should control the life of the great public schools. But Mr. Thring is essentially a sower of seed—one whose penetrating originality discovers and throws abroad those germs of truth which become a permanent addition to the living forces of the world. His position as a great educational thinker has been fully recognized of late years, and he has frequently been called upon to address the most important bodies connected with the profession in England. The paper published in this number of THE REVIEW is a characteristic exposition of some of his views.

G. R. PARKIN.

Collegiate School, Fredericton, N. B.

SCHOOL AND COLLEGE.

Girton House School, Halifax, closed on June 16th; also, the Academy for young gentlemen. Principal F. C. Sumichrast is winning a high reputation for his school.

The Pictou Academy closed July 8th for the summer vacation without any special exercises. Over 300 students, including special as well as regular, were enrolled during the year.

The Convent, Stella Maris, Pictou, N. S., held a musical review, June 24th. Sixty-six pupils from this institution marched with the public schools on the 21st—in the Jubilee procession.

Dalhousie college celebrated the Jubilee by planting a memorial oak. The contractors are rapidly pushing the work of building. The law class rooms are expected to be ready by September.

THERE were over 300 applicants for license at the closing examinations of the New Brunswick Normal School in June. Of these, one was an applicant for grammar school license, and about fifty for first class.

The public examination of the schools of Charlottetown took place during the last days of June. The *Examiner* sums up their results in the following gratifying terms: "The Chairman of the City School Board, claims, with good reason, that our schools are now 'second to none;' and we cordially agree with the *Guardian* that they are a credit to Charlottetown and the province."

In all the encœnial addresses delivered at the N. B. University, in June, the subject of more practical, even technical education, was referred to. This is a hopeful sign.

The University of McGill, Montreal, will give a local examination for matriculation into its Medical school at Pictou Academy, N. S., this summer. The time will be announced in our next issue.

St. Bernard's Convent, Antigonish, gave an elaborate and highly successful entertainment to the public on June 24th, at which medals and prizes were distributed by His Lordship Bishop Cameron.

St. Francis Xavier College under President Dr. McNeil, has been considerably extended both as to buildings and curricula. The attendance from abroad is very large. A very attractive calendar is published.

The public closing of the schools of the cities of St. John and Portland took place on Monday, June 27th. The exercises in both cities were of an interesting character, and many valuable prizes were distributed.

The Halifax Academy closed on June 30th. The public examinations were conducted simultaneously in all of the departments, in the forenoon; and in the afternoon a very pleasant entertainment brought the proceedings to a close.

The Nova Scotia Provincial Normal school closed just before the meeting of the Educational Association. The qualifications of its students are constantly rising, and its influence on educational work is yearly becoming more marked.

The Halifax School for the Blind closed June 10th. Its able and energetic Principal, Mr. Fraser, with the "Quintette Band," (all pupils), started on a concert tour through the three provinces. He is doing a noble work, and doing it with a great measure of success.

St. Joseph's College, Memramcook, closed in June. During the past year there were 186 students receiving instruction in this institution, which is doing such creditable work in the higher education. Among its graduates are many occupying distinguished positions to-day in Canada and the United States.

Mount St. Vincent Academy closed June 30th. A splendid musical programme was prepared. Seven pianos, and in some instances twenty-one performers executed some of the pieces. The literary display was also creditable. A number of gold and silver medals, medallions, and prizes, were distributed to the fortunate winners by His Grace Archbishop O'Brien.

Acadia College closed on June 2nd. The total number of students enrolled during the year was ninety-one. All the senior class (17) were graduated. The total attendance at the Horton Collegiate Academy during the past year was 90; and at Acadia Seminary 83. These institutions are in a flourishing state, and there is a steady and gratifying increase of those who wish to avail themselves of the privileges that these institutions afford.

Convent of the Sacred Heart, Halifax, closed June 29th. The unexpected death of the Very Rev. Monsignor Power caused the omission of the specially entertaining features of a superior programme that had been prepared for the occasion. The awarding of the prizes, which were presented by His Grace Archbishop O'Brien, was the principal work of the day. The exercises were strictly private, not even the parents of the pupils being present.

King's College encœnia came off June 30th. Rev. D. C. Moore, of Stellarton, preached the sermon. Canon Brock announced that the taking of classics or mathematics for degrees was no longer compulsory, a student may give in any three subjects chosen. At convocation degrees were conferred on a number of gentlemen. The Haliburton prize was won by A. P. Murray, B. A., subject, "The Orators of the Maritime Provinces." The subject for next year, value $30, is "Rise and Progress of King's College." The donor is Mr. J. V. Ellis, M. P., St. John. A Jubilee address to Her Majesty was signed by the college officers and alumni.

The Deaf and Dumb Institution closed on July 2d. Lieut.-Governor Richey presided, and a number of notables was present, including A. G. Bell, telephone inventor, and Kiesel, a deaf mute from the Washington College for deaf mutes. Principal Hutton, of this institution, has not only an American but a trans-atlantic reputation. His genius as an educator is remarkable. The Institution had sixty-nine pupils during the past year, forty boys and twenty-nine girls. Of these forty-three are from Nova Scotia; thirteen from New Brunswick; seven from P. E. Island; and six from Newfoundland. It is the only institution of the kind in the Atlantic Provinces of Canada.

THE CLASS-ROOM.

Under this head will be placed hints and suggestions to teachers in the arrangement of classes and exercises, selected because they are practical and designed to teach pupils to *think*. Contributions for this page, adapted for all grades, are solicited from teachers of experience. Catch questions and knotty problems not desired. Those only that will train the thinking and observing powers of the pupils can be inserted.

THE words of His Worship Mayor Thorne, of St. John, in presenting the Corporation Gold Medal, deserve to be written in letters of gold in every class room. He reminded the boys of the necessity of attending to details—of doing even the most trivial services with all their might. It is the boy who "sweeps out the corners" that rises to the highest place. Each must make his future. A great future is not so much the product of genius as perseverance.

ARE you aware, dear sir,—I address male rather than female teachers, because I have found the fault more common with the former,—what a bad habit you have fallen into in repeating the answers of your pupils before proceeding to ask another question? Or perhaps you merely say, "yes, that is right!" Both faults are bad, the first especially so. It is needless repetition, and a waste of time, leads the pupil to express himself carelessly if he knows that you will present the matter to the class in your words (perhaps in stentorian tones) and in short will take the life out of any class in a short time. Break yourself of such a habit. B.

What is Profitable Work for the Primary Schools?

Teachers who have more than one grade to teach find the need of quiet, busy work, which shall be useful, practical and entertaining. They want work that will so occupy the mind that there will be no disposition to play, to be indolent, or troublesome. The following contains some suggestions:

Cut from the daily, weekly, monthly papers, and old magazines, suitable notices and advertisements that contain useful words for spelling. To make durable, paste them upon cards, or stiff card-board, and distribute to the children to copy. Suitable advertising cards may also be used. Bill heads of different kinds of business may be collected for copying; thus business forms are learned, together with spelling and penmanship. Correct forms of notes, bills, receipts, and letters, when not obtainable in print may be written upon smooth cardboard. Little items of information may often be culled from papers and old magazines. These may also be pasted upon card-board for copying. Bits of poetry, and wise sayings of great men may be used in the same way.

Outline drawings, so simple that children could copy, are often found in papers. These the children could copy and write simple sentences about the drawings.

The children may write lists of actions that are being performed around them; as, John is reading, Mary is cleaning her slate, My teacher is walking, &c. They may also write lists of objects in the room, naming to what kingdom they belong, of what material made, of what use as a whole, or as to their parts.

Furnish rules and let the children measure slates, desks, and books; and, if able to multiply, they can find the square contents of each. They may draw lines a certain number of inches, also squares, and divide into smaller squares, triangles and rhombs, &c.

Get many varieties of leaves, trace the shapes on card-board, cut out and draw in veins. Write names of leaves and their parts upon the traced leaves, and give to children to trace on slates or paper; draw veins, and write the names as in copy. In this way all the parts of the leaf may be learned, also the names of the principal trees as well as garden and house plants.

This employment will keep them quietly busy and will be pleasantly instructive. The doing impresses the memory better than anything else.—*Teachers' Institute.*

Plant Lesson—The Rose.

If possible provide each class with a single rose.

The object of primary lessons in botany is to awaken observation, and an interest in plants and flowers. Children may be taught to analyze flowers, and see the resemblance between those of the same family, long before they are capable of learning the botanical terms.

T.—What flower are we to study to-day? *P.*—A rose. *T.*—What colors do you see in the rose? *P.*—I see red, pink, white, yellow, green. *T.*—Which parts are green? *P.*—The stem, leaves, bud, and a part of the flower are green. *T.*—We will call the green part of the flower the "cup." How many leaves has the cup? *P.*—It has five. *T.*—Which part of the flower is red, and pink, and white? *P.*—The leaves. *T.*—Since they belong to the flower, call them the flower leaves. How many flower-leaves are there. *P.*—There are five flower-leaves. *T.*—What else do you see in the rose besides flower-leaves? *P.*—I see a lot of little stems with yellow heads on them. *T.*—All count them. Finally call for complete statement about the rose, and also position of leaves. Compare the rose with strawberry blossom, with the apple, pear, plum, and cherry blossoms. Have little ones analyze a flower in this manner every day, and thus lay the foundation for botany proper.

EDITORIAL NOTES.

THE death of John Bennet, Ph. D., took place at Dalhousie on the 1st inst. The deceased had long been connected with educational affairs in New Brunswick. He was Chief Superintendent of Schools for the province for many years, prior to the appointment of Dr. Rand. He filled the position of Superintendent of Schools for St. John City for nine years, until a stroke of paralysis in 1881 removed him from active life. Dr. Bennet was a gentleman of scholarly attainments, of quick perception, and possessed of a genial disposition. His kindly and generous nature procured for him many warm friends among teachers, who will long hold him in affectionate remembrance.

SEVERAL articles intended for this issue have been crowded out. They will appear next month.

THE Educational Institute of New Brunswick conferred honorary membership on President Inch, LL. D., of Mount Allison University, at its recent meeting. It was a fitting tribute to a gentleman who has for the past thirty-five years identified himself so thoroughly with our educational progress.

AT THE Kings County Teachers' Institute, which met at Sussex, N. B., on Thursday and Friday, June 23rd and 24th, several excellent papers on the English subjects taught in schools were read. The desire for more careful training in these important subjects is gaining ground.

THE second annual closing of the School of Agriculture, Normal School, Truro, took place on the evening of July 11. Addresses were given by Hon. W. S. Fielding, Provincial Secretary, Hon. J. W. Longley, Attorney General, and Prof. Geo. Lawson, Ph. D., LL. D., President of the Royal Society of Canada and Secretary for Agriculture, N. S.

THE "Sun" says—and we believe its views will meet with general approval—that popular opinion will certainly sustain the school board in offering all reasonable inducements to persuade Mrs. Carr, the accomplished principal of the Victoria school, to remain in St. John. The fame of Victoria school has gone abroad, but only the people of St. John know how much of its success and progress is due to the lady at its head.

INSPECTOR PATILLO in his report says: "I write advisedly when I state that the extra week, or five weeks' vacation, will be generally acceptable to the ratepayers of this district." By a more regular attendance at school when in session, ratepayers may have their children enjoy a longer health-giving vacation, and at the same time have them advanced much more rapidly and thoroughly than as at present. Irregular attendance hurts not only the delinquent, but really destroys sometimes several weeks' work per term for the whole school.

WE have just received the "Minutes of the Seventh Annual Convention of the Provincial Educational Association, of Nova Scotia," held in the Assembly Hall, Provincial Normal School, Truro, July 14th and 15th, 1886. It contains about ninety pages of matter, including the principal papers read at the convention, minutes, etc., of the Normal School Alumni Association, Victoria School of Art and Design, Summer School of Science, etc. It is a valuable compilation, and Secretary MacKay has performed his duty well. We shall take occasion to refer editorially to several subjects treated of within the compass of its covers.

INSPECTOR MACNEIL says in his report: "The advantage of oral instruction is becoming more and more appreciated, and the days when a pupil was required to recite pages of matter quite unintelligible to him, without receiving any other explanation than probably a nod or word of approbation if he knew his task, or a sound caning if he did not, are fast passing by. There are still a few schools where the text book and the rod are the real teachers, while the presiding genii in human form are only so many head-pieces, who imagine that their only duties are to call the roll, to *hear* the lessons, and to draw their pay; but they are now comparatively few." It is the growth of this sentiment which has called into existence the Summer Science School.

INSPECTOR MORSE says in his report: "In a few cases, however, I have found teachers discharging their duties in a perfunctory manner, and paying little attention to training their pupils to think for themselves. In such cases it has been my aim, as far as the time at my disposal will permit, to inculcate the necessity of getting pupils to comprehend the ideas contained in their lessons, rather than to repeat the words of the text book by which those ideas are conveyed. It is to be hoped that the time is not far distant when all who have charge of our schools will be teachers in the highest sense, and when all ratepayers and trustees will be able to distinguish readily between those who *teach* and those who *keep* school." Next to hoping that the perfunctory teacher may become a live teacher, we pray that the ratepayers and trustees may readily discover him. We shall do what we can to assist.

PERSONAL NOTES.

Inspector Carter examined the schools of Grand Manan and out-lying districts of Charlotte County in June.

Prof. Stockley, A. M., of the New Brunswick University, is spending a portion of his vacation in Boston.

Howard Moore, of Moore's Mills, N. B., graduated at the recent Commencement of Boston University Law School.

Miss Bessie Narraway, B. A., Chief Preceptress of the Wesleyan College, St. John's, Newfoundland, is spending her vacation in this city.

James Trueman, of Carleton, St. John, who has completed his second year in the post-graduate course at John Hopkins University, is home on his vacation.

Mr. Amasa Plummer, of Jacksonville, has succeeded Mr. Palmer as Principal of the Superior School, Hartland, Carleton Co.

Howard Murray, B. A., of New Glasgow, Pictou County, N. S., who has for some time been studying in London, has been appointed George Munro tutor in classics in Dalhousie.

Prof. John Waddell, of the Royal Military College, Kingston, Ontario, who, only thirteen years ago was a student at the Pictou Academy, is going to spend his vacation in London.

C. B. Robinson, Pictou Academy, reports *Aphyllon uniflorum*, Torr. and Gr. (cancer root), as found near Durham, Pictou Co. It is the first Nova Scotian station published for this species.

Arthur Stanley Mackenzie, B. A., at present in Yarmouth, has been appointed George Munro tutor in mathematics at Dalhousie. We regret to learn that at present he is suffering from ill health.

Avard Fulton, teacher at Lower Stewiacke, N. S., the year previous to last teachers' Provincial examination, was so successful as to have his two candidates for grade C. stand respectively first and second on the list for the whole Province.

Edmund L. Newcombe, M. A., LL. B., a partner of the law firm of Meagher, Drysdale & Newcombe, Halifax, and President of the Alumni of Dalhousie College, has been elected by the Alumni as a candidate for the vacancy in the board of governors, and has been appointed.

F. A. P. Barnard, LL. D., S. T. D., L. H. D., President of Columbia College, New York, upon whom King's College, Windsor, N. S., has just conferred an honorary degree, is one of the Vice-Presidents of the Spelling Reform Association of America.

Miss Gertrude King, a graduate of the Hope Institute, Nashville, Tenn., and of the South Kentucky Scientific, Classical, and Normal College, has been engaged to fill the position in the Mount Allison Ladies' College, recently vacated by Miss Freeman.

Rev. George Patterson, D. D., is writing an article on the "Plague of Mice," in northern Nova Scotia, 1815, for the *Canadian Record of Science*. Principal MacKay, of Pictou, we notice from communications in the Provincial press, has also been collecting information on the same subject.

Wm. Saunders, F. R. S. C., who has been for many years President of the Entomological Society of Ontario, of the Horticultural Society of America, etc., has been appointed Director of the Experimental Farms of Canada. The Dominion is fortunate in having among its citizens a man so well qualified for the position.

A. McN. Patterson, Esq., Principal of the Boys' Acacia Villa Seminary, at Horton Landing, Kings County, N. S., we are glad to see, is winning plaudits from the press on account of his successful work. Mr. Patterson is one of our leading educationists, and was one of the most popular Presidents of the old Provincial Educational Association of Nova Scotia.

George Patterson, B. A., late Principal of the New Glasgow High School, has assumed charge of the Richmond County Academy. This spring he won the prize—$50—offered by the Alumni of Dalhousie College for the best history of the college. He wrote up the history of Victoria County when in charge of its County academy. We may expect next a history of Richmond County, judging him by the successful energy that has hitherto characterized him.

BOOKS AND EXCHANGES.

Newfoundland: If our readers want to read a fascinating history, they can be entertained. Newfoundland is the oldest British Colony in America. Its isolation has left us of the mainland in comparative ignorance of its development. Its history must, therefore, be of exceeding interest to the student who has already made himself acquainted with the history of the Canadian Provinces. The Rev. M. Harvey, F. R. G. S., who is the author, has done his work very faithfully and completely, as well as felicitously. It contains about 450 pages, with a large map, and about 30 very suggestive and descriptive engravings.

Guides for Science Teachings: Attention is directed to the advertisement of D. C. Heath & Co. in another column, concerning these books, which were referred to in the last issue of the Review. The students at the N. B. Summer School of Science, recently held in St. John, were much interested in some of these, and the cheap and excellent manner in which they are got up.

THE TEMPERANCE TEACHINGS OF SCIENCE: By A. B. Palmer, M. D., LL. D. This little book is designed to teach students the harmful effects of alcohol. During his address on School Sanitation, before the N. B. Educational Institute, Superintendent Crocket warmly recommended the book to the attention of teachers as one worthy of their close consideration. From a hasty glance through the book we can fully endorse this opinion. It does not array a startling list of facts against the use of alcohol, but *educates* children in a convincing and systematic way concerning what is destructive to mind and body. Published by D. C. Heath & Co., Boston.

LECTURES TO KINDERGARTNERS, PEABODY: This is one of D. C. Heath's most interesting publications. Not only is it invaluable to the teacher in the kindergarten, but especially to all teachers in our primary schools, as well as to head masters and principals, who should know what kind of training is done in the lower departments. The contents show the scope of the volume: Lecture I, Education of the Kindergartner, given in Wesley Hall, 1872. II, The Nursery. III. The Principle of Discipline. IV. The Kindergarten. V. The use of Language. VI. A Psychological Observation—first part. VII. A Psychological Observation—second part. VIII. Religious Nurture. IX. Glimpses of Psychology. X. Appendix.

D. C. Heath & Co., Publishers, Boston. Price $1.

GILL'S SYSTEMS OF EDUCATION: All progressive teachers who are anxious to place their art on a scientific basis, will welcome Prof. Gill's Systems of Education, consisting of a course of lectures, delivered to students in English training schools, on the systems represented by—The Pioneers; Roger Ascham; Comenius; John Milton; John Locke; Vicesimus Knox; the Edgeworth's; Pestalozzi; Oberlin; Wilderspin; Mayos; Home and Colonial School Society; Froebel; Dr. Andrew Bell; Joseph Lancaster; The Intellectual System; Storr's Training System; Brougham; Thos. Wyse; Horace Grant; and the Educative Department in Present Existence. In a clear, forcible, and pleasant manner, the author has united much valuable biographical matter with what he has to say of the founders of each system. The Lancaster and Bell movement in education is treated in an especially able manner. Published by D. C. Heath & Co., Boston.

MONOGRAPHS ON EDUCATION: D. C. Heath & Co. have published under the title of Monographs on Education, a number of essays prepared by specialists, choice in matter, practical in treatment, and of unquestionable value to teachers, but which have hitherto been lost to the profession; being too long for popular magazine articles, and yet not sufficient in volume for books. It is the design of the publishers to furnish these monographs, in paper covers, at a low price, and to continue the series as long as the teachers buy freely enough to allow the publishers to recover merely the money invested. From the excellence of those already published, we bespeak a liberal patronage by our teachers, who, we feel sure, will welcome each new number as it appears.

Of this series the four following have been received:

Modern Petrography.
By GEORGE HUNTINGTON WILLIAMS, of the John Hopkins University. Price by mail, 25 cents.

The Study of Latin in the Preparatory Course.
By EDWARD P. MORRIS, M. A., Professor of Latin, Williams College, Mass. Price by mail, 25 cents.

Mathematical Teaching and its Modern Methods.
By TRUMAN HENRY SAFFORD, Ph. D., Field Memorial Professor of Astronomy in Williams College. Price by mail, 25 cents.

How to Teach Reading and What to Read in the Schools.
By G. STANLEY HALL, Professor of Psychology and Pedagogy, John Hopkins University. Price by mail, 25 cents.

HOW TO STRENGTHEN THE MEMORY: Natural and Scientific Methods of Never Forgetting, by M. L. Holbrook, is a book which all teachers and students will find invaluable. In it are contained principles, the persistent application of which cannot fail to make even the most defective memory a strong one, and will enable the student to master the most difficult subjects in a comparatively short time. Published by M. L. Holbrook & Co., New York.

WEBSTER'S DICTIONARY: It is difficult to imagine how a more complete lexicon and gazeteer could be published, so as to meet the wants of teachers and students. A teacher who has Webster's Unabridged as his daily companion, is certainly possessed of one element of success.

SPELLING—A MAGAZINE DEVOTED TO THE SIMPLIFICATION OF ENGLISH ORTHOGRAPHY; OFFICIAL ORGAN OF THE SPELLING REFORM ASSOCIATION. VOL. I., NO. 1, MAY, 1887. We have just received this new quarterly of sixty pages, which is published for $1.00, in Boston, by the Library Bureau; in London, by Trubuer & Co.; and in Leipsig, by G. E. Stechert, 10 Hospital Street. "What is the Spelling Reform?" some one asks. Before you are aware of it, perhaps, you will find it sweeping around you. The leading philologists and English scholars of Great Britain and the United States have, within the last few years, declared for it, and it is certain we are on the eve of a very important reform. The stickler for our present system of spelling to-day will, in the next generation, be considered as absurd and mischievous—more mischievous than the believers in witchcraft of a former century are considered to-day. See who are the officers of the Spelling Reform in America. See what has already been done in other countries. See what a tremendous gain we may make. No single publication can supply you with so much information as "Spelling." Address: Library Bureau, 32 Hawley St., Boston.

THE CRITIC, Halifax, has issued a very superior Jubilee number, containing articles by some of the ablest writers in Canada. The paper is very judiciously edited, and has a staff of able contributors.

The Rural Canadian for May has been received. It costs $1.00, and is published by C. Blackett Robinson, 5 Jordan St., Toronto. We commend this journal to farmers or even teachers in agricultural districts. There are many suggestions in it which might improve agricultural industry through the practical oral lesson given in the schoolroom.

Calendar of Dalhousie College and University: We have received the Calendar of this Institution, for 1887–8. The first half consists of a sketch of the history of the University; governing board and officers; the various points of information required by students in the various faculties, etc., all condensed into about 100 pages. The second part consists of the examination papers of last year, which takes up more than 100 pages. Copies of the Calendar, with examination papers, may be obtained at 25 cents each, from H. Barnes, Esq., Nova Scotia Printing Co., Halifax.

Popular Science Monthly: Among the excellent articles for July, is one on the origin of the North American great lakes, which is of great interest to the Canadian students of geography, and scarcely less so the article on Earthquakes, by Prof. G. H. Darwin.

The Century: The July number of this magazine is a beautiful holiday number, rich in illustrations and in entertaining sketches. "Among the Wild Flowers," by John Burroughs, is an admirably written and profusely illustrated article. Published by the Century Company, New York.

Science is henceforth to come out in a cheaper and modified form. It is the American standard scientific weekly, published by "the Science Company," 47 Lafayette Place, New York. Price $3.50 per year. The first two numbers for July have appeared and give promise of maintaining the excellence of this valuable periodical.

The Swiss Cross, the organ of the Agassiz Association, is filled with very interesting elementary scientific articles. "Amateur Photography, and its Possibilities," with its chemical engravings, must be a very valuable contribution for students of science. The July number, commencing volume 2, is at hand and is as beautiful in its make-up as it is excellent for beginners in science.

BOOKS RECEIVED.

History of England for Beginners: By Arabella B. Buckley (Miss Fisher), edited by Robert H. Labberton. Published by MacMillan & Co., London, and New York. Price $1.00.

Wood-working Tools: How to use them. A manual. Published by Heath & Co., Boston.

First Year in Latin: With Exercises on the Inflections and the Principal Rules of Syntax; also, Extracts from Cæsar's Gallic War, with Special and General Vocabularies and Notes. By George Stuart, A. M., Professor of Latin in the Central High School, Philadelphia. Philadelphia: Eldredge & Bros. Mailing price, 95 cents.

Thirteen Stories of the Far West: By Forbes Heermans. Cloth, 12mo. pp. 263. Syracuse N. Y.: C. W. Bardeen, Publisher. $1.25.

CORRESPONDENCE.

Editors of Educational Review:

Gentlemen,—I am pleased to learn that you propose to aid teachers in the study of Natural History, by a series of such articles as the one which appeared in your first number. The illustration of the lessons, by cuts of native objects, cannot fail to excite a greater interest among both teachers and pupils. For instance, the pupils in our schools, brought in, early in spring, a number of cocoons, which were placed in a breeding cage. Several imagos had emerged shortly before the Review reached us; but as our text book, "Packard's Guide to the Study of Insects," did not give an adequate description of *Platysamia Cecropia*, we were unable to determine the species with certainty. By superposition and comparison we found that a dried specimen of the moth corresponded exactly, in outline and markings, with your finely executed cut. All doubt was thus removed, and your excellent article was read with much greater interest, as we knew it gave the history of the very insect which had already excited our curiosity and admiration. J. B.

Petitcodiac, N. B.

Editors of Educational Review:

Gentlemen,—We are very glad to see that science lessons of a primary nature will be an important feature of the Review. My school has brought bees, ants, June bugs and caterpillars this week, and we are going to be on the look out for an emperor moth larva this fall, so as to get the cocoon spun in school." Teacher.

Windsor, N. S.

Editors of Educational Review:

Gentlemen,—The teachers of Sackville have taken a step in the right direction, by organizing what is known as the Parish Association. The first meeting was held on the 16th April, in one of the lecture rooms of the College, kindly provided by Dr. Inch. Already some ten or twelve teachers are enrolled, and the association promises to be a decided help in the teachers' work. Sec'y.

Sackville, N. B.

SPECIAL ANNOUNCEMENTS.

All exchanges and letters from Nova Scotia, except those containing subscriptions, should be addressed to "Educational Review," Pictou, N. S., and those from P. E. Island to "Educational Review," Charlottetown, P. E. I.

We ask our readers to overlook the cut in this issue, illustrating the article in the "Ferndale School" series. We were disappointed in obtaining in time the cuts which had been ordered to illustrate the article for this issue.

We must remind those who may receive this number and who have not yet handed in their subscriptions that the paper cannot be sent without an order, accompanied by the amount—$1.00. If it is not convenient to remit, ask that the paper be sent in order to secure each number as it appears, and remit at the first convenient opportunity.

THINKING IN SHAPE AND PICTORIAL TEACHING.

AN ADDRESS TO THE TEACHERS' GUILD, BY THE REV. E. THRING, M. A., HEAD MASTER OF UPPINGHAM SCHOOL, ENGLAND.

Earth is a battle field. The clash of armies meeting is a mere transient symptom of the ceaseless ebb and flow of conflict, that goes on, all unperceived, in every city, village, home—nay, in every human heart. Education, and the training of life, cannot escape the universal lot. The globe on which we live is a parable. Full of unseen tides of seas of fire with an occasional volcano betraying their existence. Men mark the volcano, and disregard the fiery sea. But if the sea itself is within the reach and control of man, then it would be madness not to study its nature. Now the ceaseless conflict of principle in education, and the causes which create the conflict, are within the reach of man's research and control. They demand our attention.

The fact is that mankind are divided into two camps. Every one belongs to the one or the other, however high and refined, or however low and brutal he may be.

There are the lordly spirits who look on the world as subject to their power, and proceed to handle heaven and earth, man, animal, and matter, according to their own good pleasure. They have got hold of the scissors of creation, and with wonderful sagacity and pains set to work to cut infinity into little squares, which they can understand and master, and move at will. Out of these they compose a universe of their own. It is very ingenious, and they make all fit in, and come within the compass of their knowledge, and form a lovely tesselated pattern, smooth, and hard, a polished perfection of surface, which is presented to all who advance to meet them on their own chosen side of argument. This is one camp, the camp of intellect and knowledge.

Then there are the Shakespears, and all those pupils of light, who approach infinity with its infinite hints of infinity of unknown and unknowable glory, in a spirit of worship, with eyes open, and loving, and humble. Men, whose first glance at creation has merged more or less their own personality in a glad bewilderment of joy at all they see, and who pass on lost to themselves and their own bounded powers, satisfied with an overflow of never ceasing delight as they see; all their being bathed in light; feelings, and intellect, and heart, and tongue, all alike filled and quickened by an inpouring on souls ready to receive. Happy spirits, whose supreme ideal would be to live like a dewdrop, however small, yet capable of taking in a perfect image and reflection of the sun himself, swallowed up in a universe of light, and yet containing it; light all round; light on this side, light on that, light within, light without, yet with no power in itself to grasp—for who can grasp light? only willing and able to receive.

This is the other camp; the camp of the seeing heart, and the seeing eye, and the love of greatness bowing down before life which is greater than itself.

It is obvious, that the scissors and the squares, and the dewdrop and the sun, are diametrically opposed to one another in essence. It is obvious, that knowledge worship and the lust of the head, are deadly enemies to the loving eye and the humble spirit. It is obvious, that the manufactured universe is a different conception from the universe of infinity that is. It is obvious, that a hard hand stretched out to seize facts, and the winning a way by humility and love into the heart of things, are as far apart as whipping a slave and wooing a bride. They belong to different worlds.

Every living being, consciously or unconsciously, is in one of these two classes, ranged under one or other of these banners, is in one camp or the other.

The pothouse oracle can be as omniscient as the most worshipped philosopher, and with equal justice. Each wields the scissors of creation in his own world. The village laborer with the reverent heart can be as wise as the wisest thinker, and with equal justice. They are both full of light. Neither wants more. Neither sets up for more than he is; as the sailor's kettle did, which when filled claimed the sovereignty of the sea; as many a kettle has done since, and black kettles too.

Until this vast chasm and split is recognized as the one fact in dealing with life, no beginning in education, which is the training of life, has been made consciously on any true principle. This seriously affects our subject to-night of thinking in shape, and pictorial teaching. For knowledge hunting is one thing, and the seeing eye and active mind, another.

I fearlessly assert, what it is not my business to-night to prove, but I can prove it, that intellect worship and the banner of knowledge set up in a kingdom mean death to true progress, death to the welfare of the vast majority, if unchecked.

Few stop to consider what knowledge is. It is only second-hand information. The sum of the facts collected, noted and laid up, by the labor and research of those who have gone before us.

It is very valuable—so is gold; but the old story of the man found dead in the desert by the side of his heap of gold is not out of date, and never will be. Or, if you like it better, the more recent example of the returning colonist, who was drowned when the

"Royal Charter" was wrecked, by the gold in the belt round his body. Supposing the knowledge all got, it may drown you. But as a fact, it is not got. To the majority it is administered like physic to a dog, half shoved down his throat, and then his mouth held, if you can do it for his biting, till he has gulped it down, some at all events, from sheer inability to get rid of it. Many cannot be said to take it at all. And no one will dispute that second-hand information not taken is worthless.

But is it less worthless if not understood? Is it less worthless in the modern version of the fools of our ancestors clothed in modern motley, a dab of language here, a dab of mathematics there, a bit of this, and a shred of that, all stitched together without a pattern or order, parti-colored and patchy, manuals and date-cards, and a pitiable want of any texture of sufficiently thick fibre to let the victim "sit in the belfry and warm his five wits" like the owl? If, indeed, he has any wits left to warm, and they have not all departed under this patchwork process, and left behind nothing but a firm persuasion that he cannot learn ; which is only too true.

Throw aside the few who are strong enough to shift for themselves, and I appeal to every schoolmaster in England, from the Board school in its lowest phase to the public school in its highest, as to what in their hearts they believe about the rank and file of their pupils, whether they are willing and capable acquirers of knowledge or not. Above all, whether the results attained by the majority bear any proportion to the time spent. I have talked with many, I have read much, and never yet in talking, and never in writings, outside the magic circle of officials and amateurs, have I found any difference of opinion as to the boys and their work as a whole. I myself after thirty-three years' experience, and a good bit of the thirty-fourth, emphatically state that I have only lately begun to really become aware of the utter ignorance of the English boy in English common words, common stories, common knowledge of all kinds, and the utter indifference to being ignorant, and the still more surprising apathy towards attempts to excite thought, which prevail, and, unless I am much mistaken, are gaining ground in this generation, and becoming worse and worse every day.

My appeal is to Philip in private, not to Philip in print. I affirm that Philip in private is in despair over the mass of boys, and the way he has to deal with them. The work done (the boys that is) is condemned. But it is the boys we want to see full of power and training. What is the remedy for this condemnation? The remedy is "Think in shape." *If you are allowed to do it.* This is the practical answer. For everything follows if this is done. This alone rouses mind. Mind must be roused. But mind is, without exception, the most perverse thing in creation. Mind will do anything but think. Mind will crawl through any number of manuals, and grovel over as many date cards as you like : ay, and bear any punishment rather than think. Mind will wriggle out of thinking by every conceivable twist and twiddle. Mind is the prince of shirks.

Yet mind is very active when it likes. Is it not possible that this ingrained reluctance to think does not rest with mind, but has something to do with the way in which mind is treated. If you load a racer like a cart horse, and expect him to race, I suspect he would lay back his ears and kick not a little. So does mind, the racer. In the great market of the world the cart horses rule, and test every one by the number of sacks he can carry for sale. Nay, some of the strongest beasts of burden walk proudly round the market carrying their sacks, and don't even sell. The cart horses have it their own way. Every fool can understand sacks, and so the racer is nowhere. Memory, and knowledge, and the many sacks carry the day. Thought hasn't a chance. But thought is wanted, and the mind must be made to think.

The mind must be taught to think in shape, to translate meaning out of shape, and to translate meaning into shape. That is, train the mind, your own and other people's, whenever it sees anything, at once to find out what thought made the shape it sees. And on the other hand accustom it to take every word used and put it into some definite shape, example, or reality. This translation and re-translation of shape into thought and words, and of words into thought and shape, awakens mind, and makes thought possible and pleasant.

Let us proceed to examples. In other words, let us put what has been said into shape, and begin our work by thinking in shape ourselves. I must first, however, lay down as an axiom, that it does not matter in the least how simple, imperfect, or absurd even, the shape may be, if it embodies the thought in a vivid way, as when we say, "He stood like a rock." Here is an illustration of this on a larger scale: A friend and colleague of mine was reading with his little girl of six years old Campbell's poem of Lord Ullin's daughter. She was delighted, but puzzled. There were so many persons, and so much movement. The lake, and the mountain, the ferry, and the road, the pursuers and pursued, got mixed up together and entangled in her poor little mind. Of course her father gave her an elaborate explanation, getting slightly out of temper in tone and word, when she still couldn't see it. He did nothing of the sort.

Breakfast was just over. The table was crummy. He took the crumbs. He made one heap stand for the angry father and his company, another for the mountains, a thin circle for the lake, a little bit of crust for the boat, two little bits of sugar for the lovers, and all was clear. His little girl took in the whole thing, she thought in shape. These few crumbs changed her world for her, perhaps for ever, gave her mind solid ground and living power, instead of leaving her suffocated under a heap of words. Those few crumbs in an able man's hands lived, and imparted life. Never lose sight of the crumbs and their marvellous power. What could we, unhappy that we are, have done with our unhappy classes under like circumstances? O the deadly paralysis of words, words, words! often not understood singly, and, if understood singly, utterly bewildering when whirled round in the boiler of an elaborate, self-satisfied explanation. O the curse of words and memory!

Then again, let us apply another bit of familiar knowledge. At the battle of Worth, at the beginning of the Franco-German war, 17,000 men were killed. Why don't you burst into tears at this vast presence of desolation, agony, death, pain, ruin? Simply because it is not present. The figures are present. They are an arithmetical fact, all pat for an examination paper. But we don't weep for an examination paper; unless, indeed, we have to answer it. These many thousand deaths move you not. But I, for my part, agree with the old General, who is said to have locked himself in his room every Sunday to read Mrs. Ewing's story of "Jackanapes" unseen. I could not trust myself to read it in public, or, her "Story of a Short Life," and her "Six to Sixteen," with the death of the old French noble. Yet these are fictions, and only three, set against those many thousands of real sufferers. But the fiction is real, because it is thought in shape; the reality is unreal, because it is fact in cipher, no nearer the heart than any other bit of arithmetic. I have purposely taken these three simple narratives, because they are the most transparent that I know, the most free from artificial excitement, the most direct appeal of heart to heart, exquisite in their simplicity, pure spirit, mind touching mind by the passage of light, clear and untainted by extraneous mixture; in fact, the most perfect specimens of thought in shape. Thus the unreal becomes real, when it is thought in shape, and the real unreal, when ciphers are put in its place.

But figures and arithmetic are not the only ciphers. Every word not vividly understood is a cipher. We will leave common words at present, and take abstract words. The fondness of the youthful and the uneducated for general terms cannot have escaped the notice of an experienced teacher. The general terms are so convenient; like charity, they cover a multitude of sins. Well, take the axiom, "Law kills love." I dare say you think the illustration so perfect that it conveys no meaning at all. Let us translate it into shape. A good home may stand for love. The children in a good home are young natures undergoing training through love. And accordingly theft, gluttony, and violence, ill-temper, and all the evil passions, either do not appear, overborne by the higher life and its pure atmosphere, or, if they appear, are dealt with in a loving spirit. But let us suppose that the first moment a child appropriates an apple, or breaks a window, the police are called in, and the small offender taken before the magistrate. There would be an end to love. And you get at once the axiom, "that law kills love," as soon as thinking in shape is practised, stamped upon the mind in clear characters; an axiom, which after all is only a condensed statement of most of St. Paul's epistles, even as the gospel is the other side of the same truth, namely, that love establishes a kingdom higher than law, and above it, though it is not difficult to fall down out of the kingdom of love, and the family life, into the realm of law, and make police courts the choice instead of a father's love.

In this way, by thinking in shape, ciphers and memory drop into their proper place, and reality begins. Most people, however, live in a world of ciphers. The hard facts are ciphers; the words are ciphers; nothing lives. The men and women are wooden figures, animated automatons, ciphers too; and the successful master of innumerable cipher-facts becomes a ruler, and sways senates, and deals with delicate life as with wood. And the people, well—the less said about them, when they worship the great cipherers, the better. They have never been taught to think in shape at all events. But the commonest words are still worse off. What everybody knows, nobody thinks about. So different is knowledge from thought. In nine cases out of ten knowledge means the shut mind. The knower has got his x and y pat. They transact his daily work and his talk. He has collected a box full, he shuts down the lid, locks it, and is satisfied. But what does he really know? We will concede him at once a certain amount of bread-and-butter power. X and y do this pretty well. He can set up house; we have furnished him, perhaps, with respectable pots and a little fuel; and he is a reasonably good pot boiler. As Wordsworth's old cook told us, when asked by one of our ladies to admire a splendid sunset, one of those glorious glimpses of heaven's great picture gallery, which we sometimes get, "Lor', ma'am, I am a decent cook, and tidyish lodging-house keeper, but I don't hold with none of them sort of things." Yes, we make, perhaps, decent cooks, and tidyish lodging-house keepers, though I have heard this contradicted, but mind and sunset are nowhere. "We don't hold with them sort of things." Just look at the small amount of literature, and the slight bowing acquaintance with words which our average samples of humanity have, and which yet they imagine they know. No one ever yet heard an argument going on in an ordinary company anywhere, palace or pothouse, I believe, without becoming aware in the first five minutes, that the speakers are using the same words in entirely different senses, frequently changing the senses backwards and forwards as convenient, not from dishonesty—they have no intention of cheating or conjuring. We have mentioned abstract terms already; but take the word liberty; one combatant means by it, the liberty of the individual to grow as he pleases; the other, the liberty of the majority to make him grow as *they* please; and neither are aware of this. All this arises from their never having learnt to think in shape. Logic can teach the right use of word ciphers; but thinking in shape alone teaches the right use of words. Indeed the most learned men are often the greatest sinners in this, marvellously ready with accurate ciphers and cold facts, which serve to disguise utter non-thought and confusion underneath, just as a smooth sheet of ice coats over the muddy depths and weeds below.

This is the case with the symbols they have and use. But very often there are no symbols to speak of, a practical vacuum. A question is asked. The unhappy victim tries to remember, as he calls it. But there is no memory; it is simply vacuum. Now it is not possible to pull anything out of nothing. Cheques drawn on the bank of emptiness are empty. Nevertheless, three-fourths of work, so called, are frantic attempts to draw cheques on vacuum. The beginning of this is the effort to pour into a reluctant mind some unintelligible bit of cipher knowledge, and to cork it down by punishment. It disagrees; it ferments; the cork flies out; the noxious stuff is spilt, whilst the taskmaster believes it is all right because of the trouble he took to get it in. But it isn't there for all that. Vacuum is vacuum. There is no memory, and where there is no memory to begin with there is no memory at the end. But very often, though there is no memory, the answer is all there, if the poor boy had been taught to use his mind, think in shape, frame an example, look at, and then make answers from what he sees. One lesson on a chair even, would go far towards setting the mind on right method. First, the ludicrous failures to define a chair show how far the names that are true of things supposed to be known fail to convey the truths that make the names. Then the drawing out from the learner a simple, clear description of the chair which is actually before his eyes, and making him really see what he sees; then the reason for each part, the thought which has taken shape in it; then what would happen, if this or that part were left out; then, if possible, make him draw the chair; then let him see that the chair is a story told in wood; then lead him back to the first makers of chairs, and the sort of life that is implied in a chair, and so on. Then with a firm, strong hand drive home the fact that all this is a history of thought, gradually passing from shape to shape as experience led it on; then finish with the great truth that every shape is such a history, everything we see a living narrative, telling of movements of life to any mind that lives, a story-book capable of unfolding centuries of thought, which he who thinks can interpret; then go on, show him that the whole world is one great illuminated volume of thought speaking through shape, where the illuminations are beautiful and wonderful, but the power of reading what is written more glorious still.

A common chair will tell you all this, if you can read chairs and translate shape into thought, and thought into words. And this again gives practice for translating words into thought and thought into shape, until the learner learns to think in shape. Every shape is life speaking. Hence it follows that shape can be false or true, honorable or dishonorable. A sign-post can be a liar, a building a hypocrite; a room can give honor or dishonor, can glorify or insult. Nay more, life and death can depend on a room. Christianity itself cannot lodge large families in one room in a civilized country and remain christian. The christianity either breaks up the one room into many, or the one room breaks up the christianity. If a stronger power fixes the one room as permanent, good bye to the christianity.

If, again, a stronger power kept a princess in a hovel, and dressed her in rags, such treatment shows contempt for the princess, and she would be treated as a slave by the inferiors, who in this would imitate their superiors. The hovel gives answer, every room gives answer, when called on, and tells the value set on the life that lives in it.

Answer then, ye rooms. Answer, class-rooms, from end to end of England, what is thought of lessons; of lessons, the noblest of all work in the world; of lessons, the sowers of light; of lessons, the princess supreme over the children's life, the true dispensers of nobility, the royal givers of rank, the creatures of the coming generations, the sovereign powers of the world, which demand unfaltering allegiance, and unquestioning loyalty; which call for honor, courage, endurance, skill of brain and hand; which demand self-denial, purity, health, activity of body and mind; queens, which reject with scorn the lazy, the cowards, the self-indulgent, the mean. Answer, class rooms, how we treat our queens. Answer, dirt and shabbiness, fittings hacked and mutilated, tatooed with knives, all daubed with their war-paint of ink, like an Indian savage making ready for the humanizing refinements of scalping, or being scalped. Answer, walls, bare, unsightly, and grimy; or, if not bare, grimly austere with maps, and blackboards, sanctimoniously arrayed with prim pretences of improvement, tidily repulsive, like an ill-dressed woman. Is not the answer in a free translation "Out on ye, out on ye, lessons, necessary animals, but mean, kept for your bacon, not for your own sakes?" And does not the school-boy answer too? It is hard to escape something of the pig if lodged in a sty. The school-boy has not escaped, and never will till "Honor to lessons" is the first article in the nation's secular creed. Everything that meets the eye ought to be as perfect according to the work and workers, as human skill can make it. Give honor, you will receive honor. I know that boys respond with honor, when they and their life work are honored. I could speak with authority if it were fitting for me to do so. Honor to lessons is the first article in the teacher's creed. There are three ways of promoting honor to lessons. First comes the room in which they are given, and all its furniture. The room itself should be decorated. The walls should have honor written on them in honorable characters. All the furniture should be as solid and handsome as suits the rank of the workers. And every room should declare at a glance its value, and the value of the work done in it. Secondly, there should be pictures on the walls, real pictures able to raise the mind of all who see them, by their merit as pictures, as well as instructive from their knowledge power. Thirdly, the books should be as full as possible of good engravings of the countries, landscapes, and cities mentioned, and not least, with good portraits of eminent men. Nothing not good is wanted.

Allow me to say a few words on these three heads. I have ventured to bring up several examples of wall decoration. These first are the decorations of the old school-room at Uppingham, which is now used as an art school and art museum. A dado about 6½ feet high runs along the wall, with panelled squares along the top; then there is a colored space of about 3½ feet of wall, then a fresco line of 3 feet under the cornice beams. Mr. Charles Rossiter is filling every one of these squares in the dado, in number 70, with good portrait heads of the great artists from the earliest times. The space next above is hung with engravings and chromo lithographs of some of the most famous works; and along the line under the cornice runs what I must call a fresco series of scenes from the history of artist life. There are two of them; the first, Phidias showing Pericles his Athene, and Ictinus, the Plan of the Parthenon, with Aspasia, Sophocles, Anaxagoras, and Socrates, introduced. The second, Apelles and his critics, and the cobbler.

There, again, is the plan of the great school-room. The dado is stone, and low, and does not admit of decoration. The space between the dado and the fresco line is colored Pompeian red, and filled with splendid antotypes of ancient sculpture and works of art, Babylonian, Egyptian, Greek. The fresco line is ornamented with arabesque, and at short intervals medallions with sitting figures of the famous men in literature, of all time, are placed, beginning with King David and St. John, and going through a selection of the great Greeks and Romans; then taking the modern, beginning with King Alfred and Dante, and ending with Wordsworth. The windows have a border of painted glass, words of our Lord on human life from the gospels, and arms of various houses and donors. There is also a great historical window at the north end representing, in eight pictures, the foundation of the school three hundred years ago, and its practical re-foundation in this generation. At the south end there is a memorial window to commemorate the school having been the first to send out a school mission, at the suggestion of the Rev. John Foy, in April, 1869, to North Woolwich.

There are also plans for the decoration of other schools, which Mr. Rossiter has designed for me. This is one, which is being carried out in the high school for girls, in Upper Baker Street, under Miss MacRae. I would especially draw your attention to these illustrations of Æsop's Fables in double medallions, one above and one below, with the line of drawings under of the flowers, fruits, birds, insects, of the country. The principle is capable of such wide application. How many story books might appear on our walls?

You will, doubtless, object that all this is very costly. I have kept that till now. Some of it is; but much is not. Much is, I doubt not, within the reach of almost every school in England. You see those frames of frescoes of artist life. They are oil paintings fastened to the wall by their frames. The medallions in the great school-room are oil paintings cemented to the walls; others are water-colors mounted on linen, or canvas, and either framed or cemented to the walls. This is a case of Columbus's egg. This little fact turns in a moment every painter in England into a wall painter, without ever having to go near a wall. They can sit in their drawing rooms, boudoirs, studios, and do it all. There are few neighborhoods where there are not artists able and willing to paint flowers, fruits, birds, butterflies, effectively. How many a lady in the parsonage or hall would gladly ornament the village school-room, when the work can be done at home. I believe this simple fact of framing, or cementing, the knowledge of which I owe to Mr. Rossiter, to be of world-wide importance. I believe it has opened a new era in education. I look forward in spirit to the time when every village school in the land shall have its decorations, the work of the many earnest, loving, hearts and hands of the educated, who have been eager to help, but not known how to do it. Therefore I have been at some pains to-night to make you think in shape (forgive me this little hit) by bringing before your eyes some examples of the coming revolution in walls, and the sober excesses which our poverty-stricken neighbors, the school-rooms, are prepared to break into.

The second point is, the pictures on the walls. I think a great mistake has been made, when anything has been done, in dealing rather with works of art, and figures, than landscapes. I think photography has not seen its great educational vocation, or been called on by us to see it. Where there are many class-rooms, every room should have its speciality. One should be the English room, and be hung with pictures of the most beautiful or famous landscapes, rivers, mountains; a room of birds, and insects, and flowers, of Britain. There should be a Colonial room, an Indian room; then another should have the great cathedrals; another, Greek landscapes, Marathon, Athens, Delphi; another, the Italian. The class should be able to see Trasymene, for instance, with its lake, and the great plain, lying all flat and open to the eye for many a mile, skirted on the left by those fatal hills. They might be made to march down with the Roman army, the day before, through ravaged lands and ruined homesteads, laid waste by their great enemy. Then they would encamp for the night, not far from the hills sloping gently down to the green space between them and the water. There the consul and his gallant troops entrenched themselves the night before the battle, full of fury and hate, and revenge; and as they worked they would see in the evening light the gleam of the innocent looking lake, and the great plain, as yet untouched by war, stretching away, mile after mile of fertile land, and wealth of corn and cattle, flat and rich, the very picture of plenty and peace. There they passed the night, Flaminius with a haughty trust that he was the savior of his country, his army maddened at the sight of plundered homes, and the shame of their slaughtered countrymen. They should be made to see the camp break up in that April morning as early dawn grew grey, and those brave, confident men begin their exultant march. On they tramped, the legions in their pride; a fog lay thick on the broad plain and the flat lake; but the dew was on the grass, and the brisk morning breathing in their faces, and keen delight in their strength and life, and the rising sun, fresh in their hearts; and before long they reached the fair, green meadows between the lake and the hills by the side of the still waters gleaming, and the van had passed the narrow point at the end, and crowded all the pass beyond, when, hark! suddenly the still air rang, shattered by the blast of an African trumpet; trumpet after trumpet sounded, the sun came out, the mist rose, and all round them, like a great wild beast, was Hannibal and his army, in act to spring. Then came the thunder of rushing squadrons, the trampling of the horse hoofs, the headlong charge, and a great black wave of death swept in fierce onset down the slopes, and the wild horsemen of the desert leapt upon their prey. Soon, too, the gigantic Gauls whirled over head their huge two-handed swords, and dashed upon the foe. In vain those hardy soldiers turned to bay, borne down by weight, and rush and multitude; perforce they are pushed back into a dense, struggling mass of unavailing valour and sullen despair. In vain the stubborn Roman stabbed and died. In vain for three long hours they fought, with little room for fighting. Javelin and sword made ghastly space, and slowly thinned their ranks for easier slaughter, as the fierce slayers forced their way by slaying into the dense mass of helpless, huddled, human flesh, and pushed the survivors into the lake, to die there. Long before evening, the hills rose calm and silent again, and night came down on the great plain, peaceful as before, save only for those silent witnesses, some 15,000 mangled shapes, lying stark and stiff, between the hills and the lake, and the spoilers busy at their horrible market of death.

In this way each teacher, as he knows how, would turn, from time to time, the pictures to account, and breathe the breath of life over the wall. This, well done even once, would teach something of shapes big with thought, and of thinking in shape, and give a new eye for looking on the world. I need not go on to say that there would be a German room, and above all, perhaps, a portrait room, for good portraits are very powerful; and that each country, as far as possible, should be represented according to its importance, and the funds and space available. Lastly, Palestine ought to be fully placed before the eyes. The maps ought to have a room to themselves, and great care be taken to make them as attractive as possible, by their beauty as maps, by their skilful arrangement and respectful use. In this way no boy could even walk through the class-rooms of a large school without being forced to notice how full the world must be of things worth seeing, and how worthy are the books that tell of them. Even without a teacher, how much the walls can be made to print on the dullest mind! and with a teacher, what thinking in shape there can be! what a breathing of life into countries, and cities, river, forest, and glen! what a suggestion of unexplored regions of delight! what a whispering of liberty to roam, and adventurous holidays! what a certainty of activity of thought! Verily, the walls are very living, if in this way made to live. Many a poor hammerer-in of lessons might profitably wish himself a wall.

After what has been stated, very little need be said about the books, all important as they are, for the same principles and treatment, in the main, apply to them. I would repeat, that really good landscapes, views of cities, very seldom single buildings by themselves, and portraits, are wanted, with first rate, attractive looking plans. I lay great stress on beauty and attractiveness. Without beauty, an illustration is degrading to the thing it professes to illustrate. I have brought up a little book of plans—schoolwork from America, done as class-work by pupils between the age of 16 and 18, in Minnesota, which has been sent me from their Normal School. I think it illustrates what we want to get, and what a school can do in a practical way. They appear to me a thorough example, as far as they go, of thought put into shape in an attractive way.

These are a few of the principal ideas which appear to belong to thinking in shape, and the pictorial mind, as a matter of practical teaching to be daily, hourly, always, put in practice. Few, I believe, are aware of the progress that has been made in pictorial mind since the parables were spoken.

Thinking in shape, and pictorial teaching, at once turn all created things into new language for thought. Every created thing becomes on the spot, a possible new bit of thought, a possible new word born into the world of speech. I throw out, as a suggestion for any master of language, as distinct from a doctorer of words, to examine into the curious fact that, in the last eighty years, the English language has in this way doubled itself, by flashing new light into old worlds, by new combinations of words, by freer use of allusions and metaphors, and by pictorial handling of its material; and that it is practically a new language in its wonderful increase in power of expression, and the breathing of new life into its shape. For expression goes on forever, as higher life produces high manifestation of life, feelings, and thought, in human face and form, and again becomes able by being higher, more sensitive, more sympathising, not only to see and interpret the new shapes, but to find endless riches of unknown stores of precious discoveries in the old. This is the only true path of progress. And this we owe to the parables. The parables came into a heathen intellect world, which called the earth "insensate," or "the giver of food," and saw nothing but discomfort, or the comfortable, in what it did see.

The parables came into this dead world as an entirely new revelation that all created things were thoughts clothed in shape, created for the express purpose of exciting and communicating thought; that they were language—the language of God to man; an open book for man to use; pictorial teaching. The earth and all creation become in this way known to be full of secret life. The outside remains the same in its main features, but, like an expressive face, it can all be lighted up from within as soon as the living life moves; and then the linear outlines, which are all in all to the semi-heathen eye and mind, practically disappear, transfigured and glorified by new powers of life from the inner life movement. Thus, expression and pictorial mind have no end, but go on for ever; whilst outline and linear grace is finite and bounded. This is the only real progress that is possible in art, whether by art we mean literary art, or pictures, or any other of the languages that appeal to eye or ear. Art can be more expressive. Expression, by laws of nature, more and more renews itself in more excellent beauty, in which the actual outward shape is ever more and more merged. The inner nobility passing into a visible glory in which the bare shape is lost; even as the apostle saw his Lord, with a countenance as of the sun shining in its strength, so radiant that no fixed outline was seen, and with feet that burned like fine brass in the furnace; a wonderful appearance, that is, of form without outline.

This is the goal expression, brought out by inward life, to an extent that makes outline vanish in an effluence of mind and feeling which absorbs all other sight. This it is the special province of pictorial mind to see, and read, and interpret. Time forbids my dwelling on this, however little; but this vista of infinite, eternal progress is opened up by thinking in shape, and pictorial teaching, and creating the pictorial mind, as new expressiveness comes into sight and demands increasingly new power to show it. The pictorial mind first pictures to itself all its own ideas, and thinks in shape; and, secondly, is ever extracting ideas, new and old, out of the things it sees, picturing to itself all the words it uses, translating and re-translating thought into shape, and shape into thought, till all things live and move for it in a universe that is living thought incarnate. The lesson book is always before it. In city or desert, church or hovel, street or field, with flower, or trees, or cloud, or sun, or animal, or bird, or insect, from end to end of all things, there is the everlasting voice crying, "He that hath ears to hear, let him hear; he that hath eyes to see, let him see; for life infinite, language universal, lies at your feet for pleasure and use always." The pictorial mind is the only power man has that is capable of infinite progress. It is the only power that belongs to all men. It is the only power that is within reach of the poor. It can be taught. It can almost be created.

As the world goes on, and knowledge increases, it will be more and more impossible to know it all, a thing which was once quite within reach. Every man, however learned, will be narrowed by degrees down to a single subject. But subjects are many. There are a thousand languages, for instance; to know how to speak even half a dozen really well, is an achievement, and so on, through the whole range of knowledge. How can any one man cope with this accumulation of facts? Boasts of knowledge, therefore, belong to the nursery level, betokening stupendous ignorance of man's capacity for knowing, and of what there is to know. Let us get out of the nursery, and betake ourselves to true progress and men as they are.

Knowledge with its broken victuals, and its half-starved paupers snatching at the scraps, has lorded it long enough at the gate of its monastery. It is high time to turn to better things, to liberty, to the free use of active powers. Pictorial teaching is the great agent to advance this. If it once gets fairly out of prison, and touches the world, all will be changed. And there are signs of better things. There are upheavings of discontent; the sea of living fire within is in motion. There are everywhere groanings of bondage felt, of loathing, and scorn, for the dead hand, the really dead hand, the dead, dry, hard hand of power from without set on the heart of teaching, and stopping its free pulsations. There is a rattling beginning to be heard amongst the skeletons, and bones, and specimens, and the stuffed figures, and ticketed vocabularies and verbs with pins through them ready to be struck down, and all the Noah's Ark assortment of the examination, inspection, scisserdom repositary of the manufactured world of scisserdom. There is, too, an English-speaking world besides England to which we appeal not entirely in vain. Moreover, true ideas, like music, know no country, are exempt from the curse of Babel, and pass from heart to heart. Yes, there is a shaking in the valley of dry bones. It may yet be, as in the vision of Ezekiel, "There is a noise, and behold a shaking, and the bones came together, bone to his bone. And, when I beheld, lo! the sinews and the flesh came up upon them, and the skin covered them above. And he said unto me: Prophesy unto the wind, and say to the wind, come from the four winds, O breath, and breathe upon these slain, that they may live. And I prophesied, as He commanded me, and the breath came into them, and they lived, and stood upon their feet, an exceeding great army." There is a noise and a shaking, and a hope, with us too. May not we, too, prophesy to the four quarters of heaven, where the English-speaking race over all the world is found, and call upon the breath of life to come and breathe life into the dry bones of our manufactured world, and put an end to the dead hand. There is life stirring. No true life ever dies. Kill it here, it reappears there, and in spite of all killing, lives. There is life in thinking in shape, and in the pictorial mind. And life is universal. All men have life. All men can have life trained, and raised, and taught. The true definition of a teacher is, "One who sows seeds of life, and fosters them." Let us bury the bones that cannot live.

But thinking in shape, and the pictorial mind, are life powers. They can bring light to the dustiest, darkest corner of memories which are strewn with the dust, and broken chips of knowledge. There will be a veritable resurrection when thinking in shape is taught.

We stand on the threshold of an almost untravelled world in beginning this work. We are bound on a voyage of discovery; a band of pioneers—yet certain of our promised land. Let the be-all and end-all of teaching be for us the thinking in shape, and the pictorial mind. Let our watchword be "Liberty to teach."

KINDNESS is stowed away in the heart like rose leaves in a drawer, to sweeten every object around.

TRUE greatness shows itself in ignoring or quickly forgetting, personal injuries, when meaner natures would be kept in unrest by them. The less of a man one is, the more he makes of an injury or insult. The more of a man he is, the less he is disturbed by what others say or do against him without cause.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

M. S. D —What is the enclosed fine, white deposit, taken from the bottom of Irwin's Lake?

It is what has been called infusorial earth. But the name is incorrect. The infusoria are animal organisms. This white powder belongs to the vegetable kingdom. It consists of beautifully ornamented, transparent silicious shells of various shapes. Each shell is so small as to be invisible to the naked eye, and constituted the skeleton of a one-celled plant belonging to the order *diatomaceæ*. The *diatom* is a plant whose cell-wall is made up of the most regularly sculptured transparent quartz. The living part is a soft yellowish protoplasm which fills the cell and secretes the silica from the water for its covering. These cells multiply in a regular way, and many species have the power of moving through the water, while others are always attached to some object. Our specimen is very pure and white, consisting of the tests or skeletons of dead diatoms which have probably been accumulating in the lake for ages. Boiled in an acid or burned in a fire those shells—or more properly speaking—*cells*, only become more clear and beautiful. This material has been used for absorbing nitro-glycerine to make dynamite, for tooth powders, for polishing powder, for packing fruit. Being composed of cells, it is extremely porous. It is also used for making water glass, for silicious tiles, for packing steam pipe packing, being a good non-conductor of heat, and for other purposes.

X. Y.—1. Will the citrate of silver make sea water drinkable? 2. If so, is it practicable on a large scale?

Ans. 1. The citrate of silver changes salt water into a sugarless lemonade. When put into sea water a white heavy precipitate is formed which soon settles, leaving a clear liquid above. If the proper proportions are used, all the salt will be precipitated to the bottom with the silver, forming the chloride of silver. The water above, will contain the citric acid, and will therefore be sour. If the proper proportions be not exactly used, there will be either some salt or citrate of silver remaining in the water. 2. For every ounce of salt taken out of the sea water, about *two* ounces of metallic silver made into the citrate will be required. So the process must be rather expensive, although the silver chloride made in the process is not lost.

A. M.—There is large and also a small yellow butterfly quite common here. What are their names, do you suppose?

Ans.—The large one *Papilio turnus*, (swallowtail), the small one, *Colias Philodice* (clouded sulphur) very probably.

TO TEACHERS AND STUDENTS.—School Teachers and Students wishing to make a few hundred dollars during vacation should not fail to correspond at once with R. A H. MORROW, of this City. His address is 59 Garden st., St. John, N. B.

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THE FOLLOWING persons have consented to act as Agents for the REVIEW, and are authorized to receive subscriptions. Others will be appointed as soon as arrangements can be completed:

J. & A. McMILLAN, St. John.
JAS. McLEAN, Pictou, N. S.
J. F. CHISHOLM, St. John's, Nfld.

THE SUCCESS that has attended the publication of the REVIEW so far is most gratifying. Every mail brings a number of subscriptions, many of these accompanied by the warmest expressions of commendation of its appearance and contents. Our Superintendents of Education, the Inspectors of Schools, and other prominent educationists have warmly endorsed it, and have been unanimous in declaring that we have made a most excellent start. Our July number was declared by many to be even better than the initial number. The REVIEW for August is full of good things, although its editors feel the need, in common with other teachers, of a little relaxation. Our number for September may be looked forward to with interest as containing many excellent features. Our aim is to make the REVIEW second to no educational periodical published in Canada; and to do this we expect the hearty co-operation of every live teacher in the Atlantic Provinces. Support your local educational paper. It is the best.

NOVA SCOTIAN CONVENTION.

The annual convention of the Educational Association was held in the Normal school building, Truro, on the 13th and 14th of June. The presence of the President, Dr. Allison, who was attending the American Educational Convention at Chicago, was greatly missed by the large assemblage of teachers (about 450) present. The proceedings, however, were never more interesting or harmoniously conducted. The convention was called to order by Inspector Roscoe, and on motion the Vice-President, Principal Calkin, of the Normal School, took the chair. Supervisor McKay, of Halifax, then read the report of the executive, which was unanimously approved. On motion, Supervisor McKay was elected Secretary, and W. E. Thompson, Halifax, Assistant Secretary. W. T. Kennedy, Principal of Albro Street School, Halifax, then read a very superior paper on "The Teacher's Out-of-School Work." The leading thought was the very great impulse which would be given to all educational interests by the teacher making of himself an intelligent and active citizen in every sense of the word, in keeping abreast, if not in advance, of modern progress in all its popular phases. The paper was well spoken to by W. E. Thompson, Halifax; Principal Burbidge, Morris Street School, Halifax; and L. A. McKenna, of St. Mary's School. Rev. Professor Anderson next addressed the convention on the superior advantages of the "Tonic Sal-Fa" notation over the staff system for the schools and for popular musical instruction in general. He illustrated the system by chart and examples.

The afternoon session opened with a very able paper from Miss Jackson, of Kings, on the "Relation of Skilled to Unskilled Labor." Principal MacKay, Pictou Academy, and Principal Hutton, of the Deaf and Dumb Institution, Halifax, followed, speaking in high terms of the manner in which the subject had been presented in the paper.

Professor Mullin, of the New Brunswick Normal School, who was sitting on the platform, was at this stage introduced by the Chairman. In a very pleasing address he expressed the pleasure it gave him to meet his fellow educationists of Nova Scotia, intimating that he was one of a committee appointed by the Educational Association of New Brunswick to bring the matter of an interprovincial convention of the teachers of the three maritime provinces before this Association. He hoped the proposition would be looked upon favorably by the three provinces, and that they might experience great benefit from such association with each other.

Prof. Burwash, of Mount Allison College, read a very well illustrated address on "Elocution as a Study for Teachers." To his fame as one of our ablest scientific instructors, he has thereby added the reputation of being a most skilful and accomplished elocutionist. A complimentary and interesting discussion on the subject was engaged in by Principal Calkin, Professor Denton, of the Halifax Academy, Mr. Andrews, of Margaret's Bay, Principals Kennedy and Burbidge.

In the evening a public meeting was held, presided over by Sir Adams G. Archibald. Mayor Muir, in a short address, welcomed the convention to Truro, and was responded to by Principal MacKay, who also referred to the important subject of industrial art education, on which the lecturer of the evening, Mrs. Leonowens, was about to address the meeting. Mrs. Leonowens spoke for nearly an hour in a most fluent and effective manner, detailing some points of her experience in Burmah, which illustrated most powerfully the possibilities of a proper school of art. It is saying very little of what might be said when we say that scarcely ever had we seen a platform speaker so completely charm an audience as did the beautifully eloquent speaker on this occasion. Short and appropriate addresses following were made by President Sawyer of Acadia College, Principal Hutton, and Mrs. Condon, of Halifax. Never was a public meeting better enjoyed, to judge from the remarks going out, as well as by the department inside.

On Thursday morning Principal MacKay was called on to report for the committee managing the Summer School of Science. After this report he moved that "this Association approve of an interprovincial convention of teachers for Nova Scotia, New Brunswick and P. E. Island; the executive to make such arrangements as may be necessary to carry the same into effect." Seconded by Professor Eaton of the Normal School. and spoken to by Messrs. Kennedy, Denton, Burbidge, and Brown, and passed unanimously. Principal O'Hearn, Halifax, read a most practical and valuable paper on "Economy in Education," which was followed up by short speeches from Principal Kennedy, Principal MacKay, and Professor Denton. Principal Burbidge made a good point in showing how economy in education could be effected by making our grammar for the English language itself instead of following the models of the classical grammars.

President Sawyer, of Acadia College, followed with a powerful address, showing in what respects the prescribed register was and was not a correct index of the work of the teacher. In a comparatively short compass a great many important points were given the teacher. President Forrest, of Dalhousie College, who was on the platform, was then introduced by the Chairman. In an eloquent speech he referred to what had been done towards the advancement of education during the past few years, gave practical advice for the present, and congratulated the teachers on having such a paper as the EDUCATIONAL REVIEW, which he just saw on the Chairman's desk. Principal Calkin, the Chairman, said that President Forrest had anticipated him in speaking of the EDUCATIONAL REVIEW. The paper was worthy of the support of the profession, and he hoped every teacher in the province would get it. The balloting for the Executive Committee for the ensuing year, which now took place, resulted in the election of Principal MacKay, Principal Cameron (Yarmouth Academy), Principal Kennedy, Miss Taylor, Inspector Roscoe, and Inspector MacDonald.

Thursday afternoon's session was opened by an address from Professor Denton, after which he introduced a motion, recommending the Executive to arrange to have one session for the discussion of any subject of which a teacher might give notice. The motion passed. E. M. Chesley, of Boston, then read a paper entitled, "Idealism or Spiritual Science." The paper showed extensive reading, and a masterly grasp of the problems of mental philosophy and an especial appreciation of the idealistic schools. This paper drew out the university scholars. Professor H. Mellish of the Pictou Academy, and Principal Ebenezer MacKay of the New Glasgow High School, made very felicitous speeches. President Sawyer concluded the discussion in his own masterly fashion. The paper of Professor Roberts on "The Teaching of English" was read by R. J. Wilson, Esq., of Halifax. This paper was one of the most important read at the Convention. The teachers were much disappointed in not seeing Professor Roberts present. A motion by Inspector Roscoe, seconded by Inspector Condon, and unanimously passed, recommended the Educational Review to the teachers of Nova Scotia. After a vote of thanks to railway authorities, etc., for reduced fare, the Convention adjourned.

Want of space forbids us to give more than a brief outline of the papers read. There were many important points brought out in the papers and discussions to which we shall refer in the next and following numbers of the Review.

N. S. SUMMER SCIENCE SCHOOL.

The Nova Scotian Summer Science School has been a success far beyond the anticipation of its projectors. First, it has been demonstrated that a very considerable amount of practical scientific work can be done in the two weeks of its session. Secondly, and perhaps more unexpectedly, it has been shown that the object and method of the school have the cordial—more, the enthusiastic endorsation of the leaders of thought and action, as exemplified in such educational and industrial centres as Windsor, Kentville, and Wolfville — the communities which have had an opportunity of expressing themselves on the subject.

The first session was held in the Convocation Hall of Acadia College, Wolfville, and was open to the public. On the platform with the Faculty of the Science School, were President Sawyer of Acadia College, Professor Kierstead, and Revs. Dr. Higgins and Jas. Anderson. The President, Principal MacKay, of Pictou, in his opening address reviewed the rise and progress of the scientific element in the public school system of the Province. In 1850 the present Sir J. W. Dawson was made first Superintendent of Education, and in every quarter of the country he commenced to breathe the first promethean spark into the dead clay. But a dark day soon came for Nova Scotia, when its scientific light was transferred to Montreal to irradiate Quebec. In 1855 Dr. Forrester, of immortal memory, succeeded, and although without the transcendent genius which made his predecessor a cosmopolitan scientific prince, he still did much for science in his Normal School course. But the seeds planted by Dawson and nourished by the summer zephyrs of the nineteenth century, had been growing. The good English and mathematical curricula of Rand and Allison were beginning to show signs of well rounded maturity by the intussusception of natural science. Acadia College and its Alumni did noble service in this cause. He referred to the valuable efforts of the Acadia Science Club in arousing the attention of the Province to this phase of education, and complimented its President, Professor Caldwell, and its energetic Secretary, A. J. Pineo, A. B., on the good accomplished. For this reason alone Wolfville was a most appropriate location for the first meeting of this school. It was also the centre of a portion of country rich in natural history treasures, and the poetic associations of historical romance. He then referred in detail to the object of the school, and the great necessity for the education of the perceptive faculties of the young, and the moral, æsthetic and industrial advantages likely to result therefrom. President Sawyer, Professor Kierstead, and Rev. Dr. Higgins followed in short, but forcible and genial speeches, welcoming the school to their midst. Short speeches were also made by Rev. Jas. Anderson and several of the faculty of the school.

Lectures commenced at 8 o'clock every morning, one hour for each subject, closing for the forenoon at 12. The afternoon was also generally filled in from 2 to 6 p. m., and the evening from 8 to 10 p. m. Excursions, of course, interrupted this order, when they occurred. But no time was lost. Prof. F. H. Eaton, Normal School, Truro, lectured on Chemistry the first week, and on Physics the second week. The very first day he set them to work in sections in the laboratory, making their own apparatus—such as extemporized alcohol lamps, the heading of glass tubing, and the performing of fundamental chemical operations. The same plan was pursued in Physics.

Prof. A. E. Caldwell, M. A., of Acadia College, lectured on the constellations, and gave sky demonstrations from 9 to 10 p. m. The fine telescope in the observatory was brought to bear on many celestial objects; the quarter-moon, and Jupiter, with its satellites, being most popular. A. J. Pineo, A. B., also set his class to work with the blowpipe, in Mineralogy, and as it was too large to be accommodated in one room when at laboratory work, the class was for this purpose divided into sections. Principal A. H. MacKay, of Pictou Academy, conducted directions of a few typical zoological forms in full class, the students being all seated around tables with their dissecting parapharnalia. E. J. Lay, A. B., Inspector of Schools, analyzed plants in full class, lectured on some interesting points, and assisted his students in general to become practical botanists. Dr. Sinclair, of Dartmouth, gave two lectures on the anatomy of man, illustrated by a skeleton, charts, and the dissection of the hearts of oxen and sheep by the class.

Dr. Reid, of Dartmouth, gave two lectures on human physiology. The object of all the instruction was to enable the student to do practical work. This could be seen from the armament of an excursion party. There was the tin vasculum for plants, hammers and coldchisels for the geologist and mineralogist, nets, cyanide bottles, and boxes for the entomologist.

The first excursion was by train to Hantsport, where Dr. Honeyman, Provincial Geologist, introduced the School to the transported pebbles and boulders of granite, gneiss, greenstone, diorite, amygdaloid, jaspers, agate, etc., found in the railway cuttings through the drift gravel banks, and demonstrated the direction of their transportation. Then the shore and the railway divided the attention of the geologists and botanists until Horton Bluff was reached on their way homeward. Here magnificent illustrations of the dynamics of geology were seen, and some very interesting carboniferous fossils found. The second excursion started by steamer on Friday morning, 29th July, from Wolfville, spent three or four hours at Amethyst Cove, Blomidon, where some very fine specimens of tropean minerals were collected, and on the cliff above some rare plants. The steamer next proceeded to Partridge Island on the other side of the basin, where very good specimens of the zeolites were obtained. This excursion was a magnificent success in every respect. Another excursion was made to Kentville; at the train the School was received by the leading citizens in carriages and driven around all the various places of interest, and finally to the Court House, where Warden King gave an address of welcome. Here, also, were displayed a fine collection of Nova Scotian birds, mounted by Mr. Bishop, a skilful taxidermist and a very promising naturalist. After the study of this collection the excursion returned to Wolfville. The kindly disposition of the good people of Wolfville was next illustrated, by a drive given the whole School, along the picturesque valley of the Gaspereaux, a region interesting also on account of its natural history. Add to this the conversazione given in the College to the School at the farewell meeting: First, a splendid programme of music, vocal and instrumental, with exhibitions of elocutionary art; then a collation, rich and bountiful, for the School and some two hundred invited guests; and, thirdly and lastly, a symposium of wit, wisdom, and eloquence, in short speeches from the Rev. President Sawyer, Professors Higgins, Jones and Caldwell, Inspectors Condon and Roscoe, Prof. J. B. Hall, Ph. D., of Truro, and A. J. Pineo, A.B. The thanks of the School were tendered the Faculty of the College and the people of Wolfville, by President MacKay. On the closing day an excursion was made to the classic region of Windsor. Arrived at the station the School was spirited away as at Kentville, by the leading citizens in fine carriages. Localities of interest in the neighborhood were visited, the objective point in particular being the great gypsum quarries at Wentworth—said to be the greatest in the world. Professors Kennedy and Roberts, of more than continental fame, were also present, extending with the finger of instruction the open hand of hospitality. Here the School loaded up with splendid selenite, and unlimited quantities of anhydrite, fibrous gypsum, etc. Then the drive returned to the fine Museum building, where the genial and learned President of King's College, Canon Brock, introduced the excursionists to its interesting treasures of science and art. But that was not all. It was now approaching the evening, and the scientists with appetites whetted by a well spent afternoon under the blue sky, were invited to a collation both substantial and luxurious in the dining-hall of the College. President MacKay, seconded by Professor Caldwell, tendered the best thanks of the Summer School to the Faculty of King's College and the people of Windsor for this royal expression of their sympathy with the efforts inaugurated to advance the practical study of the works of nature. Rev. President Brock replied in a short but eloquent address, in which he expressed the belief that the closer study of the works of God would not only tend to advance the industrial interests of our country, to extend mental culture, but also to produce in its moral and religious results the same effect as the study of the Word of God. From the College to the train, and the Summer School for 1887 is over. There was hard, continuous, but deeply interesting work. There were also many occasions of exhilerating enjoyment, and of pleasant, social intercourse. President Sawyer, Professors Tufts and Caldwell, Inspector Roscoe, C. D. Randall, Esq., and others, gave receptions and paid many kind attentions to the School.

In addition to the scientific work, Rev. James Anderson gave lectures on the Tonic Sol-Fa system, with which he has had so much success in Halifax. Professor Shaw also gave two very valuable lectures on elocution.

The spirit shown by the students was a remarkably plain evidence of the fact that we have in this day and generation, men and women as devotedly sacrificing their energies for the public weal, as in the most palmy days of missionary effort and martyrdom.

Among the two thousand and odd teachers and educational officers in Nova Scotia, there are some whose intense longing to do some permanent good for the rising manhood and womanhood of their country would, we were going to say, receive canonization were their devotion fully known. And yet they are likely but imperfectly appreciated, and perhaps wholly misunderstood, sometimes, by the mercenary motived masses for whom they delight to spend and be spent. Some such are included within the list of students at the Science School, who, though enrolled as students, have done more for the general success of the work than the most brilliant lecturer in the faculty of instruction. The lecturers were deeply interested, apparently, in studying the different methods of each, and attended the various classes as far as possible with those enrolled as students. The list of those latter, as furnished by the Secretary, is as follows:

Inspector Roscoe, Wolfville; Inspector Condon, Halifax; Supervisor McKay, Halifax; Professor Hall, Truro; Professor Denton, Halifax; Principal Congdon, Dartmouth; Principal McRae, Annapolis; Principal McLeod, Kentville; Principal Sprague, Liverpool; Principal Burbidge, Halifax; Rev. James Anderson, Musquodoboit; L. A. McKenna, Halifax; W. E. Thompson, Halifax; J. W. H. King, Hantsport; Miss N. A. Burgoyne, Windsor; Miss B. McClatchy, Windsor; Miss E. Stewart, Pictou; Miss J. C. Fullerton, Pictou; Miss M. Anderson, Musquodoboit; Miss R. Marshall, Yarmouth; Miss C. Mumford, Hantsport; Miss H. Rouse, Wolfville; Miss S. A. Hamilton, Wolfville; Miss L. J. Benjamin, Wolfville; Miss F. Evans, Wolfville; Miss I. M. Creighton, Halifax; Miss A. J. Mitchell, Halifax; Miss A. M. Cunningham, Halifax; Miss I. M. Wiswell, Halifax; Miss H. L. Flowers, Halifax; Miss M. Reynolds, Halifax; Miss M. J. McPhee, Guysboro Co.; Miss E. Ellis, Elmsdale; Miss M. Kirkpatrick, Halifax; Miss S. A. Hirtle, Lunenburg; Miss Crosby, Yarmouth; O. F. Best, Canso; B. F. Porter, Yarmouth; C. E. Williams, Chester; H. Dill, Lunenburg; H. K. Marsters, New York.

Dr. Allison, Superintendent of Education, came down from Halifax for a day, to inspect the working of the School. We regret that our space does not admit of a fuller account of the proceedings. In our next we shall intimate the arrangements made by the Executive for 1888, and discuss a proposed outline of practical work to be done by students competing for a certificate from the School.

A clock whose dial is to be fifty feet in diameter, and which is claimed as the biggest in the world, is in course of construction in New York, and is to be placed at Manhattan Beach.

TEACHERS IN CONVENTION.

PRINCE COUNTY TEACHERS' ASSOCIATION.

The annual convention of the teachers of Prince County, P. E. Island, was held at Alberton on the 28th and 29th of June. About sixty teachers were present — a very respectable attendance, compared with other meetings, but surely small enough from a section of country which contains about one hundred and sixty. Papers were read by Miss MacPhail of Summerside, and Mr. Daniel Fraser of Alberton. Both were exceptionably good, and afforded the Convention abundant matter for discussion. The subject of Miss MacPhail's paper was "The Culture of the Brain." She showed that activity and labour are essential to the development of that organ. The right kind of culture is that which gives attention to mind and body. All our efforts towards physical or mental culture are to aim at the development of the moral nature of the pupil. But the medium in which the work can best prosper is an atmosphere of love—love in the home—love in the school-room —love in the play-ground.

Mr. Fraser's paper on "Teaching" was eclectic in character, but it was not on that account less interesting or instructive to his audience. The central idea of the paper was the necessity of teaching details before attempting generalization. He disapproved of the introduction of grammar at too early a stage in the course of studies, because pupils in the primary grades are not able to grasp abstractions. On the same principle he condemned the use of the unitry method in arithmetic, as involving more complicated reasoning than the simple and much shorter method of proportion. The paper elicited a lively discussion.

Mr. Landrigan, Tignish, introduced a discussion on the teaching of history. While it was in progress, Mr. Agnew, Glasgow, Scotland, was invited to address the Convention. He spoke at length, expounding his views on the teaching of history with great force and clearness.

A resolution was introduced by Mr. West, Centreville, strongly disapproving of the amendments to the Education Act, proposed at the last meeting of the Local Legislature, and expressing satisfaction at their rejection by the Legislative Council. The resolution was passed with but one dissentient voice.

A public entertainment was given on the evening of Tuesday, consisting of recitations, vocal and instrumental music, and an address by Mr. Montgomery, Chief Superintendent of Education.

WESTMORLAND COUNTY TEACHERS' INSTITUTE

Will hold its next annual meeting at Moncton, N. B., on the 15th and 16th September. Among the subjects to be discussed are "Practical Education," "Industrial Education," "The Teacher out of School," and others of importance. With such subjects as these, discussed by an intelligent body of teachers, just after school work has been recommenced, and body and mind refreshed, the very best results ought to result from the meeting. In addition to the above, specimens of scholars' work will be exhibited, and teachers are invited to add to the interest by exhibiting specimens of natural history objects.

PROF. HUXLEY ON SCIENTIFIC TRAINING.

There is great misconception respecting Professor Huxley's views of the position which science ought to hold in an academic course of instruction. Many mistake his persistent and strenuous advocacy of the claims of science, and assume that it arises from a conviction of its exclusive pre-eminence as a branch of human knowledge and an instrument of culture. To such we would recommend the perusal of the following passage which we take from *Science* of July 15th:

> At the recent Royal Academy banquet, Professor Huxley concluded his speech thus: "Art and literature and science are one; and the foundation of every sound education, and preparation for active life in which a special education is necessary, should be some efficient training in all three. At the present time, those who look at our present systems of education, so far as they are within reach of any but the wealthiest and most leisured class of the community, will see that we ignore art altogether, that we substitute less profitable subjects for literature, and that the observation of inductive science is utterly ignored. I sincerely trust, that, pondering upon these matters, understanding that which you so freely recognize here, that the three branches of art and science and literature are essential to the making of a man, to the development of something better than the mere specialist in any one of the departments. I sincerely trust that that spirit may in course of time permeate the mass of the people; that we may at length have for our young people an education which will train them in all three branches, which will enable them to understand the beauties of art, to comprehend the literature, at any rate, of their own country, and to take such interest, not in the mere acquisition of science, but in the methods of inductive logic and scientific inquiry, as will make them equally fit, whatever specialized pursuit they may afterwards take up. I see great changes: I see science acquiring a position which it was almost hopeless to think she could acquire. I am perfectly easy as to the future fate of scientific knowledge and scientific training: what I do fear is, that it may be possible that we should neglect those other sides of the human mind, and that the tendency to inroads which is already marked may become increased by the lack of the general training of early youth to which I have referred."

CULTURE vs. TRAINING.

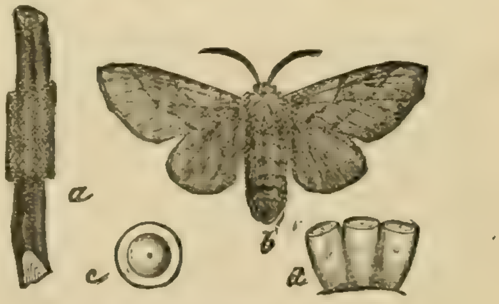
In one of the speeches recently delivered at Edinburgh by Mr. Andrew Carnegie, on the occasion of his laying the foundation-stone of the Free Library, he mentions the following incident: The shop of a baker who had signalized himself by his opposition to the adoption of the Public Library Acts being pointed out to him, he remarked, "I would like to cross over to tell him that man shall not live by bread alone." By this apposite expression, Mr. Carnegie meant to convey to his audience his conviction that there is more to be thought of than the provision which has to be made for one's daily wants—that man has a higher nature to cultivate, and that it is his duty to provide spiritual and intellectual food suited to its necessities. He emphasized this utterance when on another occasion he said, "I lay the foundation of this Free Library, rejoicing that it is soon to be the privilege of every man, of every woman, and of every child, to obtain access to the most precious treasures which this earth contains. These treasures are stored up in books which give to us in impartial form, the products of the highest minds and the noblest natures, the most accurate knowledge, the very highest imaginings, and the most precious wisdom." And yet in another speech, wishing it to be clearly understood that to his panegyric on literature there were limitations, he expressed himself in rather contemptuous terms of such acquisitions as Latin and Greek in comparison with the skill which is required to manage a lathe or drive a locomotive. Now this is a mistake of very common occurrence with those who, ignorant of those languages themselves, eagerly catch up the condemnatory expressions of those who are opposed to a training too exclusively classical, and denounce as absolutely useless an education of which they cannot understand the utility. It is true that many mechanical operations can be satisfactorily performed by uneducated men, but it is allowed by all that a man whose intelligence has been cultivated, either in school or out of it, becomes a more reliable and more skilful mechanic. And how the possession of a certain knowledge of the Greek and Latin languages should incapacitate a man for the discharge of the active duties of life, or bar his way to preferment, we fail to perceive. He has passed through a complete gradation of mental discipline, his faculty of observation has been called into constant exercise, habits of accuracy and generalization have been acquired, and a greater mastery of the English language attained. And should he prosecute the study of these languages beyond the elementary stage, his mind is furnished with food for thought, his taste is correctly tutored, and his heart and intellect brought into most intimate contact with what is best in humanity.

We have long entertained the opinion that it does not so much matter what subjects are studied in school or college, as *how* they are studied. If the only method of instruction is that of a dull, mechanical routine, and the only faculty appealed to—memory—the results will be very much the same, and as melancholy, whatever the subjects may be. But if there be the living presence of an accomplished, sympathetic, and inspiring teacher, the thought kindles itself at the fire of living thought, and the spirit grows by the mysterious contact of spirit. Linguistic, historical and scientific subjects become animate, because there is constant appeal to the reflective or imaginative powers; languages called dead live anew; the great and good of past ages are again instinct with life and passion; and even formula, which in other hands would only bewilder and puzzle, have their meaning and force made clear as noon-day. And what is of even greater moment to the community, a man of high ideas himself, his greatest ambition is to inspire with lofty principle, to inculcate clear and transparent conduct, truthfulness, honesty, unselfishness, modesty; an abomination of envy, hatred, malice, and all uncharitableness, and an indignation at every form of wrong and injustice.

In estimating results by examination papers it may, perhaps, be possible to ascertain the extent and intimacy of one's acquaintance with the subjects of study; but what means have been suggested by which we may gauge, and by what system of marking appraise the moral influence of the teacher? Perhaps it is this tendency, most prevalent at the present day, to value everything by the standard of utility, which aroused the indignation of Carlyle, and still moves Ruskin to utter words of bitter scorn against those who chant peans in honor of mechanical inventors. More than ever, when pressure and competition are so great, when men push and jostle each other in the struggle for existence, and so many are asking "how are we to get a living"? is it incumbent upon all who have to do with the training of youths to endeavor to answer the question—"How are we to live"? And surely, as a practical question, there is none more momentous. It is, we believe, in the school-room and the college that the conditions are to be provided for the true solution of the great issues which are being fought out between the various sections of the community. Social questions, the relations between capital and labor, and others, can never be set at rest so long as people grow to manhood with such crude and really false notions respecting the rights and obligations of man. And hence we would unhesitatingly affirm that the education which in too many cases is provided for the youth of the present day, practical it is called, and the constant cry is for more of it, is at best a very imperfect instrument of intellectual training. The children cry for bread and they get only a stone.

FERNDALE SCHOOL.

No. 3. Clisiocampa.



Eggs and Moth of the Forest Clisiocampa.

Teacher. I promised to give you a lesson some time on the little rings on the twigs of the apple trees which you brought to the school near the beginning of the term. We have several of these twigs here, and I have drawn two kinds enlarged on the board, which I wish you to copy. Point out the drawings and see if they are pretty correct.

Scholar. Yes. One kind at *a* in the first picture, and the other kind at *c* in the last picture.

T. Very good. These little rings you know already are clusters of eggs neatly arranged and cemented together by a moth. Please count the number of eggs in each ring.

S. 205 in mine—240 in mine—256 in mine.

T. Between 200 and 300 in each of your specimens.

S. Yes; and they are all in even, slant rows going right around the twig.

T. I shall break one of these rings and let you look at the eggs under this magnifying glass, and you must try to draw on the blackboard what they look like under the glass. As soon as each one has looked through the glass he will go to the board and draw an outline of the shape he has seen. (End views and side views something like *c* and *d* in Figure 1. are drawn.)

S. The inside of a broken egg looked as if it were all covered over with a pearly lining.

T. You are quite right. The interior is as beautiful as a shell lined with mother of pearl. But you have noticed what came out of some of those little eggs in the warm days of May.

S. Yes; ugly little caterpillars. But those that were hatched in the school-room died, while those that were hatched on the trees grew larger and spun a cobweb and eat the leaves of the trees.

T. Do you see caterpillars with a cobwebby covering on the trees now in August?

S. Yes.

T. Have you examined them closely to see if they are the same?

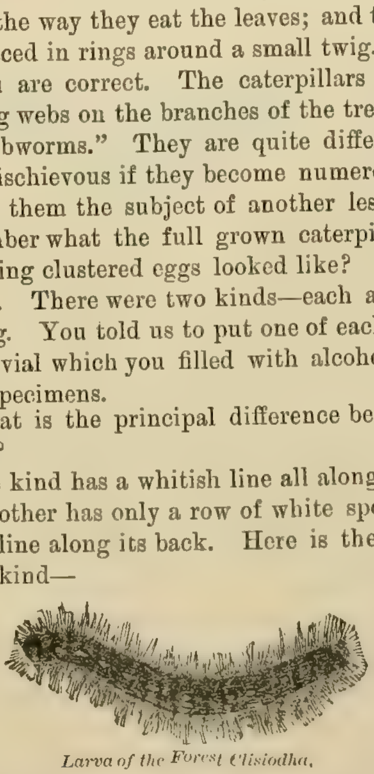
S. Their cobwebs are different, and their appearance, and the way they eat the leaves; and their eggs are not placed in rings around a small twig.

T. You are correct. The caterpillars you now see forming webs on the branches of the trees are the "Fall Webworms." They are quite different, but quite as mischievous if they become numerous. We shall make them the subject of another lesson. Do you remember what the full grown caterpillar from the little ring clustered eggs looked like?

S. Yes. There were two kinds—each about two inches long. You told us to put one of each of them in a small vial which you filled with alcohol to preserve the specimens.

T. What is the principal difference between the two kinds?

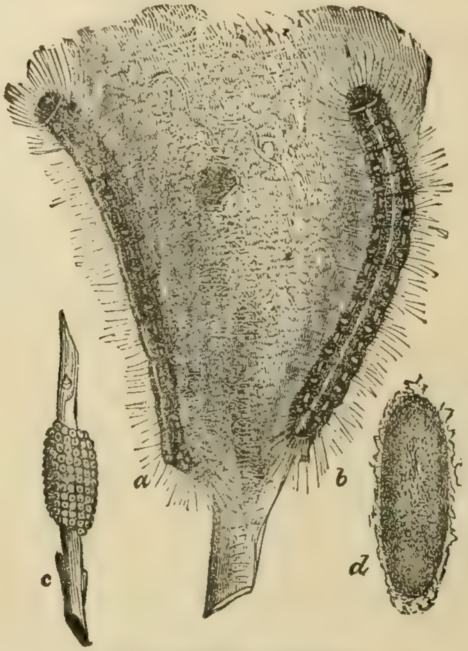
S. One kind has a whitish line all along its back, while the other has only a row of white spots nearly making a line along its back. Here is the figure of the latter kind— and the former is figured *a* and *b* in the last picture,



Larva of the Forest Clisiodha.

T. You are correct. These two species of caterpillar are very much alike in appearance, and in their habits, but they are distinct. The one in our first two pictures has been called the "Forest Tent Caterpillar," or *Clisiocampa sylvatica*. *Sylvatica* means belonging to the forest. *Sylva* is the Latin for forest. What is the meaning of sylvan shade in this line which I find in a piece of poetry? "Delightful sylvan shade when the summer sun is burning."

CHORUS. Forest shade.



The American Clisiocampa.

T. The other caterpillar is called *Clisiocampa Americana,* which is the Latin for "American Clisiocampa." It is sometimes called the "American Tent Caterpillar," or "The Lackey Worm." Here we have a sketch of its egg cluster at *c,* the larvae at *a* and *b,* and the cocoon of the pupa at *d.*

S. The caterpillars eat nearly all the leaves of our trees. Sometimes they collect in great clusters on portions of the trees, and hundreds can be crushed to death by rubbing them with a handful of coarse leaves.

T. What do you think would be the easiest way of getting rid of them?

S. By breaking off the twigs bearing their egg clusters in winter or early spring. Every twig pinched off would mean two or three hundred caterpillars destroyed.

T. Supposing you picked off all the egg clusters in your own orchard, but your neighbor didn't pick them off his trees, would your neighbor's caterpillars injure you in any way?

S. Yes. For when they grow large they wander off in every direction for something more to eat.

Another S. John Jack says that in 1883 the forest clisiocampa stripped all the hardwood trees in the woods of a large portion of Pictou County. Hundreds of acres of forest looked in June as bleak as in January—nearly as leafless as if fire had swept over the country. And when they had eaten all the leaves on one side of a railroad track, they crossed it, lying in some places several inches deep on the dry, dusty roadway. And on one occasion they covered the rails on an up grade so that the train stopped until the rails were sanded.

T. John's story is quite correct. In 1868 these caterpillars did tremendous damage in Ontario. But afterwards nearly disappeared until 1877 when they again appeared in great abundance. In 1883 they did great damage in Nova Scotia as has been described.

S. Isn't it the "army worm"?

T. Some people call it the army worm, and it often does crawl in great armies; but it is not the "army worm" of the United States; nor is it the "arm worm" which has of late been so destructive to the hay crops in New Brunswick, and Cumberland, Nova Scotia.

S. How is it sometimes so abundant and then becomes suddenly scarce?

T. Suppose the moth of the Clisiocampa to be just so abundant this year as barely not to be noticed as injurious. You know how many eggs each one of these can deposit?

S. Yes. About 200 or 300.

T. Well, next spring the summer comes in warm and favorable, and suppose no insects prey on the Clisiocampa, how much more numerous will they be on the trees with their tender opening leaves than they were the previous spring?

S. Why about 200 or 300 times as numerous.

T. But suppose the sun warmed up the trees in April so that they nearly commenced to bud; what effect would it have on the millions of eggs placed on the trees?

S. They would be hatched by the warmth.

T. And if a cold spell should succeed—how would the young caterpillars fare?

S. They would all have to die for lack of food, I suppose.

T. I have another question to ask. If you had your orchard so walled that none of these caterpillars could crawl in from your neighbor's orchard, would his neglect be injurious to you?

S. I suppose so. Because if he left only one cluster or nest to grow undisturbed, when the larva changed to the pupa, and then to the perfect moth, whetre ould be from 200 to 300 moths flying about all over the neighborhood, affixing their eggs to the twigs of the trees.

T. Where have you noticed these cocoons of pale yellow silk, with this powdery, sulphur-like dust, which I can shake out of them?

S. In the crevices of bark—under bits of board and chips—sheltered under the shingling or clapboards of the house—in corners about posts—in sheltered niches of the fence.

T. How long did the fresh cocoon which you brought here lie in our hatching box before the perfect moth came forth?

S. Two weeks—two weeks and a half—three weeks.

T. The Forest Clisiocampa Moth which we have figured above is of a pale reddish or yellowish brown, with two dark bands across its wings. Measure the specimen you have pinned in our collection.

S. It is about an inch and a half from tip to tip of its wings.

T. How does it compare with the American Clisiocampa Moth?

S. It is nearly of the same size and color, only the bands across the fore wings are whitish in color instead of dark.

T. I may also tell you that this caterpillar has a great many enemies in the insect world. Its eggs are sometimes destroyed. The caterpillar is sometimes infected with deadly, small parasites, and sometimes the pupa in its cocoon. The number of these enemies, as well as the character of the spring weather, may have something to do with its abundance or scarcity. In the meantime we shall put back your specimens into our collection and we shall label them with their proper names.

The miners of Swansea, Wales, have presented to Mr. Gladstone an address, engraved on a silver set lump of coal. This will give a new meaning to the phrase "burning words."

The London *Times* announces that a copy of one of its issues has made the circuit of the globe in sixty-nine days, its journey was made *via* the Suez Canal route to Yokohama, and thence to London *via* the Canadian Pacific line and Atlantic connections. This is the shortest time in which the circuit has been made under the British flag. Influential metropolitan and provincial journals continue to urge the importance of the recognition of the Canadian route to the East. The press is practically unanimous in favor of a subsidy to the Canadian service.

EDITORIAL NOTES.

THE "Praying Mantis," a very interesting and rare orthopter, has been taken near Windsor, N. S., by Professor Roberts, of Kings College.

WHILE 450 teachers were present at the Educational Association of Nova Scotia, only *three* Inspectors were present this year.

BEFORE our next issue many of the Nova Scotian County Academies will proceed to finish the remaining two months of the summer term with only one-third of the usual attendance. Would not the alteration of term limits and making the term annual obviate this evil?

THE St. John Board of School Trustees, at its last meeting, raised the salary of Mrs. Carr, Principal of the Victoria School, to $1,000. This decision of the Board will commend itself to all who are desirous of seeing this excellent school maintain the reputation which Mrs. Carr has so well earned for it. Mrs. Carr has signified her willingness to remain—a decision which her friends in St. John, and they are many, will hear with the greatest satisfaction.

REV. M. HARVEY, F. R. G. S., St. John's, Nfld., has successfully guided the United States fish commission schooner *Grampus* to the Funk Islands in search of skeletons of the Great Auk, which has been extinct for more than half a century. A perfect skeleton of the Great Auk would bring from $100 to $150 at one of the great museums. The *Grampus* was successful in getting specimens of everything on the island.

THE EDUCATIONAL CONVENTION at Chicago in July, was attended by over 15,000 teachers, and was one of the most remarkable gatherings ever held on this continent. A gentleman who attended from these provinces and who is interested in every phase of educational development has promised the readers of the REVIEW for September some impressions of this great convention. They will be looked forward to with interest.

THE Educational Associations of New Brunswick and Nova Scotia have unanimously agreed to recommend an interprovincial convention for the three provinces. P. E. I., through Superintendent Montgomery was the first to suggest it. An interprovincial convention once every three years might prove to be a very beneficial institution. We trust the committees entrusted with the matter will make arrangements without any delay. The earlier these arrangements are known the better.

OUR Ferndale Series will for some time be devoted to lessons on insects affecting our agricultural and horticultural interest, for the double reason: because such instruction is required to be given in Grades VII. and VIII. of the Provincial Course of Study for the Schools of Nova Scotia, and there is no text book in existence adapted for such work to the conditions of Nova Scotia, New Brunswick, and Prince Edward Island. We regret that Nos. 1 and 2 of the series are already exhausted; but a summary may be given in future if generally desired.

WE ARE indebted to William Saunders, F.R.S.C., for his interest in assisting us to obtain some of the cuts which we use in illustrating our Ferndale Series. Mr. Saunders is President of the Entomological Society of Ontario, is the author of that excellent work which every fruit grower should own,—"Insects Injurious to Fruits," and has for many years been identified with the scientific promotion of agriculture and horticulture. As Director of the Dominion Experimental Agricultural Station he paid the Lower Provinces a visit this summer.

PERSONAL NOTES.

Inspector Boudreau is at present inspecting the schools of Victoria and Madawaska Counties.

Miss Mary Fleming has charge of the Debec day school, which opened on the 1st inst.

John Stewart, M. B., Edin., of Pictou, has been elected lecturer on Physiology in the Summer School of Science.

Inspector A. G. MacDonald, M. A., of Antigonish, has been elected lecturer on Physics in the Summer School of Science.

Mr. Sprague of Liverpool, N. S., has been elected Assistant Secretary of the Summer Science School, N. S.

Professor J. B. Hall, Ph. D., of the Normal School, has been elected Secretary of the Summer Science School which meets in Pictou in 1888.

C. D. Robinson, Principal of the Berwick Schools, has won a higher provincial reputation for his school than many of our county academies. *Semper floreat.*

Mr. Mason R. Benn, has retired from the Lower Woodstock school, and has been succeeded by Mr. Frank A. Good.

Mr. William M. Tweedie, has returned to New Brunswick after five years' student life as a Gilchrist scholar in England, and on the continent.

Miss Almeda Black has been engaged as teacher of the school in the Beaconsfield District, Charlotte County, for the coming term.

Mr. W. F. Cawley takes charge of the Lower Southampton, York Co., School, for the present term, having succeeded Mr. Frank Brown.

Miss Christina Copeland of Pictou Academy, has for some years been the successful principal of the Canadian Mission School at San Fernando, Trinidad.

Mr. S. S. Taylor, a graduate of Mt. Allison University, has taken the degree of LL. B. at Michigan University.

Miss Cunningham has resigned her position as teacher in the public schools at Halifax, and has gone to Japan as a missionary.

Neil F. McKay, B. A., a Nova Scotia teacher, is Principal in the magnificent school building which graces Rat Portage, N. W. T.

John March, Esq., the hard working and efficient secretary of the St. John School Board, has lately been confined to his house by serious illness, but has so far recovered as to be at his post again.

Prof. J. G. Schurman, recently of Acadia College, now Professor of Mental Philosophy in Cornell University, is spending a few weeks of his vacation in the Maritime Provinces.

Mr. Frank P. Carvell, the Superior School teacher at Centreville, Carleton County, became a benedict during vacation and received many congratulations on the step he has taken.

Mr. D. W. Ross, formerly of Kintore, is in charge of the superior school at Grand Falls, N. B., and Miss Bertha Truswell, of Andover, will teach the primary department this term.

Mr. W. B. Jonah, A. B., Principal of the Elgin School, Albert County, N. B., visited New York during his vacation, and since his return has been the recipient of numerous congratulations, in which we desire most heartily to join.

Mr. W. F. Watson, formerly of Jacksontown, N. B., a graduate of Colby University, has been elected Professor of Chemistry and Physics in Furman University, Greenville, S. C., at a very liberal salary.

Mr. F. W. Nicholson of Windsor, N. S., a graduate of Mt. Allison, has graduated with honors in Classics at Harvard, standing third on the honor list. Mr. Nicholson wins a valuable scholarship.

Mr. S. J. Miller, takes charge of the Canterbury, N. B., school during the present term. The trustees, owing to the warm weather, about the first of August agreed to extend the holidays for another two weeks.

James Fletcher, F. R. S. C., Dominion Entomologist has been visiting Nova Scotia, and has been disseminating information at the Fruit Grower's Association, and elsewhere. His reports already are worth many thousands of dollars to Canada.

A new school-house has just been completed on the opposite side of the river in Upper Southampton, N. B. Miss Josephine Downey takes the school which has been closed for several years, the former school-house having been burned.—*Carleton Sentinel.*

Ralph Colpitts, A. B., a graduate of Mt. Allison University, has been engaged to teach the advanced department of the Harvey, Albert Co., School, and Miss Daley of Riverside, is in charge of the primary department of the same school. Both are teachers of experience, and will, no doubt, do excellent work.

Geo. M. Campbell, B. A., formerly tutor in Dalhousie College, and who afterwards took a past graduate course in Johns Hopkins University, and later won high distinction in McGill Medical College, is at present at Ottawa in the employ of the Government.

Among the names of the successful candidates for teacher's license in British Columbia, we notice the following: David Wilson, B. A., University of New Brunswick; Hector M. Stramberg, B. A., Dalhousie University, Halifax; Robert Landells, B. A., Dalhousie University, Halifax; Michael McKinnon, M. A., University of Halifax.

Prof. Drummond, of Glasgow, author of "Natural Law in the Spiritual World," is in the United States, and proposes to visit the Maritime Provinces and address the students of the different colleges. Prof. Drummond has become so widely and favorably known by his great book that his appearance among us will be looked forward to with interest.

Among the recent graduates at the Guelph, (Ont.) Agricultural college is B. Eaton Patterson, son of Sydney B. Patterson of St. John; J. A. Hartt and J. W. Hartt, Bridgetown, N. S.; W. J. Gilbert, Dorchester, N. B., and J. C. Donald, Pictou, N. S. These Maritime province young men all graduated with high honor.

Among the twenty-six young gentlemen who have been duly approved for admission as cadets to the Royal Military College of Canada, is: George Burpee McLeod, son of H. D. McLeod of St. John. Mr. McLeod stood second in the obligatory examination, having 3,603 marks, against 3,677 by J. F. E. Johnston of Ottawa, who took first place.

The many friends of R. Landells, B. A., late Principal of the Town High School, will be pleased to learn that he has secured a lucrative appointment as master of an important school at Port Moody, British Columbia. A house and garden go with the position, so that our worthy friend will probably not desire to keep "bach's hall" very long.—*Woodstock Press.*

Mr. R. M. Raymond, a graduate of the N. B. University, is visiting his friends in this province. Mr. Raymond left New Brunswick a few years ago, and went to North Carolina where he was engaged in mining-engineering until a year ago when he entered Columbia College, N. Y. He is one of Columbia's tug-of-war team who have beaten all the colleges they have been matched against.

D. Wilson, B. A., who left New Brunswick a few years ago to assume the principalship of the boys' school, New Westminster, B. C., has been appointed to the Inspectorship of schools for British Columbia. Mr. Wilson's many friends in New Brunswick will be glad to hear of his appointment, by which our western friends have secured the services of such a scholarly and efficient educationist.

The vacation just closing seems to have made alarming inroads in the ranks of bachelordom. On the 10th inst., Mr. Donald Montgomery, Chief Superintendent of P. E. Island, was married at Charlottetown to Miss Mary Isabel McPhail, the Rev. Principal Forrest of Dalhousie College assisting to tie the knot. The happy couple was made the recipient of numerous and warm congratulations. The REVIEW wishes to be numbered among those who hope that Mr. Montgomery and his bride may enjoy a long and prosperous wedded life.

THE SUMMER SCHOOL MOVEMENT.

DEAR REVIEW:

The experiment of a Summer School of Science has been successfully tried both in Nova Scotia and New Brunswick. Teachers who have attended these schools have not only had their interest in natural history awakened and quickened, but have had revealed to them how easy it is to study and to teach elementary science with only such materials and facilities as lie at everybody's hand.

There are other departments which as much need to be opened up to teachers as the natural sciences, and which are as accessible by the methods of the Summer School as they,—for instance, English literature, modern languages, music, elecution and drawing. In two or three weeks much could be done in the way of exciting an interest and giving a start in the study of any of these, and especially in outlining methods of teaching such subjects.

The promoters of the Summer Schools of Science would do well, perhaps, to expand their aims, and affiliate with the Science School a School of Literature or of Art, and thus meet a greater variety of needs and tastes, at the same time subserving very directly the interests of the common schools. For, whatever may be said of the need of more general and a better quality of teaching in the department of science in our common schools, it will hardly be questioned that better teaching of reading, and a more general teaching of drawing, singing and literature are equally a desideratum.

With faith in the adage—*verbum sapientibus sat*—I subscribe myself,

Respectfully,

A NOVA SCOTIA TEACHER.

August 13, 1887.

VIVISECTION.

Of the very many and varied forms of cruelty against which the Society for the Prevention of Cruelty to Animals are operating (particularly in Europe), perhaps the most inhuman and revolting is that of vivisection, which is a new name for a very old thing. In the medical schools of Alexandria, as long as two thousand years ago, there were some physiologists who, under the plea of advancement in science, performed experiments upon human victims. This form of cruelty, however, as practised in these modern days, briefly means cutting into or otherwise operating upon the bodies of living animals, under the professed object of obtaining knowledge of the structure and organs.

Dr. George Wilson, an eminent English physician, in an article recently written against this cruelty practised amongst medical students, says, "Let it be known and understood that all these operations have been admitted to be needless and cruel, experiments performed merely for demonstrating facts already established."

So great was the agitation and the disgust of the British public against vivisection a few years ago, that the question was brought before Parliament and a Royal Commission appointed, which resulted in the disclosure of cruelties perpetrated in scientific retreats in different parts of the world, and in reference to which Dr. C. Bell Taylor (a surgeon of high medical repute), said, "That they were of such a character that no man with a heart in him could contemplate them for one moment without a thrill of horror;" and in his arguments against the practice, citing his own experience, "He knew that in these experiments animals were baked to death in slow ovens, that others were frozen in ice machines, that they were flayed alive without anæsthetics, and that they were starved to death,—handsome full-grown dogs, having been deprived of food for three weeks together until they perished in agony."

It was also shown that a Dr. Werthein, of Vienna, in experimenting, had been known to kill twenty-five dogs by pouring turpentine over them and then setting fire to it, and that the same eminent physician has been known to partially boil five other dogs, and that several of his victims survived for days in unutterable suffering.

Other statements made at this enquiry went to show that in some of the veterinary schools no less than seven horses a week were sacrificed in the practice of vivisection, sixty-four operations being performed upon the same horse, the eyes were cut out, the ears cut off, the tail docked, the teeth punched out, the stomach opened, and frequently these partially dissected animals were reserved from day to day for further torture, or when all but dead were handed over to the younger students to practice easy experiments upon.

The following is copied from a work recently published, entitled "Vivisection and Experiments on Living Animals," by James Macauley, A. M., M. D., Edinburgh. "During three campaigns," says Dr. Hoggan, "I have witnessed many harsh sights, but I think the saddest sight I ever witnessed was when the dogs were brought up from the cellar to the laboratory for sacrifice. Instead of appearing pleased with the change from darkness to light, they seemed seized with horror as soon as they smelt the air of the place, divining apparently their approaching fate. They would make friendly advances to each of the three or four persons present, and, as far as eyes, ears and tail could make a mute appeal for mercy eloquent; they tried in vain. Even when roughly grasped and thrown on the torture trough a low complaining whine at such treatment would be all the protest made, and they would continue to lick the hand which bound them till their mouths were fixed in the gag, and they could only flap their tail in the trough as their last means of exciting compassion. Often when convulsed by the pain of their torture this would be renewed, and they would be soothed instantly on receiving a few gentle pats. It was all the aid or comfort I could give them, and I gave it often. They seemed to take it as an earnest of fellow-feeling that would cause their torture to come to an end—an end only brought by death."

If the above revelations of cruelty were not removed beyond the possibility of a question, it would be impossible to accept them as having occurred, but they are undoubtedly too true. But it is worthy of remark that in the medical schools of France and Germany these experiments are much more largely practised then in English speaking countries.

IN A GERMAN LABORATORY.

A most intelligent dog I took,
Affectionate, full of caressing grace,
With something of human love in his look,
And such a trustful, half-human face.

Had learnt tricks, too—would give you a paw
Where a brother-man would offer a hand,
Right or left, as you ask him; could understand
Your speech—it might almost fill one with awe.

Seeing how near to mankind, yet how far
These dumb and pitiful creatures are;
How all their faith and belief and love
Is centered in Man as a Lord above.

And looking into his eyes for awhile—
For knowledge is precious and gained through pain—
I bound him down with a pitying smile,
And deftly removed the left lobe of his brain.

And then, with all that I had of skill,
I healed it again, so that presently,
Though lame and sick, in his love for me
The creature strove to obey my will.

And when I asked him to give me a paw,
He gave me the left first, but when for the right
I asked, his maimed brain failing him quite,
Gave the left—and I thought I had touched on a Law.

So I persevered, and the brute again,
With a loving, sorrowful look of pain,
Brought the left paw over the helpless right,
And I marked the effort, with deep delight.

And having pushed knowledge so far, again,
I divided the opposite lobe of the brain,
And the poor brute, though willing to offer a paw,
Could no longer obey—and I grasped a Law.

Later on, still athirst for knowledge, once more
I carved the weak brain, as I did before,
Till the poor dumb wretch, as he lay on his side,
With a loving look regarding me, died.

Poor brute! he lies dead for knowledge, and I,
If I grasp not the clue, yet I may by-and-by.
Strange how weak Man is, and infirm of will,
For sometimes I see him and shudder still!

LEWIS MORRIS.

It is a matter of literary gossip that the Poet-Laureate's mantle will shortly fall on the shoulders of Lewis Morris, (the writer of the above lines,) owing to the increasing infirmities of Lord Tennyson.

The highest mountain in the world is said to be Mt. Hercules, in New Guinea, soaring to the altitude of 32,786 feet.

SCHOOL AND COLLEGE.

Attention is directed to the advertisement in another colum of the opening of Kings College, Windsor.

The Collegiate School, Kings College, Windsor, N. S., has made a valuable acquisition to its teaching staff.

The Dalhousie College building is progressing so rapidly, that the lecture rooms for the Law Faculty will be ready by September.

The Board of School Trustees, St. Stephen, decided to extend the holidays one week, and the schools will re-open on Monday, Aug. 22.

At the recent London matriculation examination held in Halifax, there was one candidate, Mr. H. M. McKay. At Charlottetown there were two candidates, Messrs. Hunt and Wright.

The indications are in favor of a large attendance at the various colleges of the Maritime provinces this year. The number of applications for matriculation at some of the institutions is unusually large.

The N. B. University will have about twenty students in the Freshman Class next year. This is the first to enter upon a four years' course. Among the matriculants, it is expected, will be three young ladies.

School of Agriculture. This institution ought to draw. Besides getting a very superior course of agricultural instruction, the students each got a government prize of $50, and some prizes went a-begging for lack of students.

There have been over 160 applicants for admission to the N. B. Normal School for the next session, which opens September 1st., and will be the first of the lengthened sessions for nine months. The buildings have been repaired, and the grounds laid out with much care and taste.

The examination of candidates for entrance to the Prince of Wales College and Normal School, was held on Tuesday and Wednesday, 2nd and 3rd inst., at Charlottetown, Summerside, Montague, Souris and Alberton. There were over 300 candidates. The examination is conducted by written papers in English, arithmetic, geography, history, latin, geometry and algebra, a pass in the first four subjects admits to the Normal School, whilst a satisfactory acquaintance with all the subjects is required of those who desire admission to the Prince of Wales College.

The Church of England Girl's School, St. John's, Nfld, closed July 21st, His Lordship the Bishop in the chair. The state of the school is very satisfactory. A number of prizes were awarded. The visitors and examiners expressed themselves as highly pleased with the work done.

Springdale Street School, at St. John's Nfld., closed July 25th. The examination was conducted by Rev. A. C. F. Wood, M. A., Chairman of the Board, and Rev. W. Pilot, B. D., Supt. of Education. A great number of certificates were presented to the successful pupils in the six classes of the school.

Four new school houses have been built in this parish since the spring opened, and will soon all be ready for occupancy—one at Tweedside, one at York Mills, one at the Swamp, and another at Acton. Little or nothing has been done about the station in the way of building this season.—*Harvey Station Cor., St. Croix Courier.*

Church of England Academy, St. John's, Nfld., closed 14th July, with the presentation of prizes. His excellency, the Administrator, presided, supported by His Lordship the Bishop and the Hon. Sir W. V. Whiteway, K. C. M. G. The Head Master, Rev. A. Currie, gave a very satisfactory account of the work of the institution. Over 100 prizes and medals were presented to those leading in the various classes of the four forms.

Normal School, Truro. This institution closed on the 12th July. Silver Medallist, Miss Joyce, of Shubenacadie; Bronze Medallist, Miss Poole of Paradise, Annapolis Co. The total number in attendance during the year was 176, made up as follows: Gentlemen 36; ladies 140. Of these 63 were from Colchester county; 25 Cumberland; 14 Annapolis; 14 Pictou; 11 Halifax; the remainder from the other counties except Queens, and one from Newfoundland. 82 diplomas as follows: B. 27; C. 55.

It is stated that for the present the Gilchrist trustees have decided to withdraw the scholarship which has for some years past been open triennially to the boys of Nova Scotia, New Brunswick, and Prince Edward Island. They have also decided to withdraw the scholarship applicable to the islands of Jamaica, Trinidad and Barbados. The trustees state that the whole subject will be reconsidered next year, and possibly it may be decided to grant a scholarship open to all the provinces of the Dominion. The acquisition of one of those scholarships usually means the best education England can furnish.

General Protestant Academy, St. John's, Newfoundland, closed July 19th. It is but eighteen months since this institution was started. It embraces a Primary, Intermediate and High School Department. The rooms are very spacious and well equipped; 143 pupils are on the roll. Principal Handcock has given great satisfaction by his tact in the management of this Academy. At the distribution of prizes, Rev. Moses Harvey, F. R. G. S. presided, and complimentary addresses were made by Reverends W. Graham, T. Hodgkinson and W. Pilot; Sir William Whiteway and D. Browning Esq., M. A.

A meeting of the subscribers to the Victoria School of Art and Design, Halifax, was held in July, and attended by a large number of ladies and gentlemen of that city. A fund of nearly $10,000 has already been subscribed towards the school, and the government has voted $800 a year towards its support. Through the efforts of the active and enthusiastic ladies and gentlemen who have been instrumental in securing the great measure of success which so far has attended the movement, and which assures a successful completion, Halifax and the whole province will reap substantial benefit. At the above-named meeting a board of directors were appointed, with A. McKay, Supervisor of Schools, as Secretary.

ALUMNI N. S. NORMAL SCHOOL.—The executive of the Alumni of the Provincial Normal School of Nova Scotia, met in Truro, July 12th, Dr. Hall in the Chair. Secretary H. S. Congdon, of Dartmouth, read the financial report for the year, showing receipts $180.45, expenditure $176.20, balance on hand $4.25. The prize of $25 for the best essay on "Should all Teachers have a Normal School Training," was awarded to Charles Hamilton, of Guysboro Co. Miss Mary Moseley's paper was a good second and received honorable mention.

At the meeting of the Association in the afternoon the prize essay was read. Mrs. Condon, wife of Inspector Condon of Halifax, was then introduced by Dr. Hall and addressed the Association on the subject of the Kindergarten. She illustrated the work by some of the apparatus of the school. Principal Calkin and Colonel Blair spoke very highly of the very able presentation of the subject by the lecturer, and its great importance. The officers for the ensuing year were elected as follows: President, Miss Bessie Miller, North Sydney; Vice-President, Dr. Hall, Normal School; Secretary, Mr. McKenna, Halifax; Executive Committee, W. T. Kennedy, J. W. King, Prof. Eaton, D. H. Burbidge, Miss Poole, Miss Cunningham and Miss Findlay.

At a meeting on Friday afternoon, July 15th, in the Normal School, Truro, called for the purpose of considering the question of starting a Kindergarten school, Mrs. Hinkle Condon explained the system of Froebel, and in a masterly address advocated its claims on the attention of parents. Resolutions were passed favoring this system of training, and pledging the meeting to adopt measures for the establishment of the school. Mr. Hugh McKenzie, Principal Calkin and others took part in the discussions. Steps will be taken at once to found a Kindergarten. The cost will be about $1,000 for the first year. A Kindergarten in Truro will be a great boon to student teachers. A summer school for teachers could also be started. Much credit is due to Truro for this progressive step.—*Hx. Chronicle, 18th ult.*

THE CLASS-ROOM.

Under this head will be placed hints and suggestions to teachers in the arrangement of classes and exercises, selected because they are practical and designed to teach pupils to *think*. Contributions for this page adapted for all grades, are solicited from teachers of experience. Catch questions and knotty problems not desired. Those only that will train the thinking and observing powers of the pupils can be inserted.

Method of Teaching Spelling.

Business men say they can get accurate accountants, good writers, grammatical talkers, for clerks; but the crying need of the hour, they say, is good spellers. Methods must be re-examined and reformed. To learn to spell is an effort of pure memory; and with pupils of average ability, the effort must be often recurring to be successful. It is an universal experience of teachers, that different pupils learn to spell most easily in different ways: that is, one pupil will learn most easily by the *written method*, another by the *oral method*, while still another will learn most easily by the new *reading method*. The difficulty with teachers has been, that they have not allowed sufficiently in their methods of teaching spelling for the differences *in kind* of ability among pupils. There are pupils who can write correctly words which they would misspell orally; and it is unfair to judge pupils by the results obtained while using one method, without having tried the other. Therefore, we offer the following reasonable method of teaching spelling: Use a book; and let your pupils use one. Assign a lesson from the book of not more than forty words. Experience teaches us that this number is sometimes more than enough, always enough. Have the whole lesson written on the blackboard; and have the class spell each word in concert as it is written. Tell the pupils to study the lesson well for the next day, and the next day hear them spell it orally. On this second day assign another lesson as before, and tell the pupils that to-morrow they will be expected to *write* ten words of the lesson assigned yesterday, besides spelling orally the lesson assigned to-day. And so on. It will be noticed that this method combines the *written* and *oral methods*, with some features of the new *reading method;* and that it includes a continual *review.* If the pupil cannot learn to spell under such a method, he will learn under no method whatever: for thoroughness is its very watchword. There are educational principles underlying it that are vital in importance, and that may be discovered by all who give the method a trial.—*Philadelphia Teacher.*

Test Problems in Arithmetic.

1. How many yards of carpeting, 1 yard wide, will cover a floor 22 feet long and 12 feet wide?

2. How many gallons of water will a tank hold that is 22 feet long, 21 feet wide, and 10 feet deep?

3. I sell peanuts at 8 cents a quart and double my money. What do they cost a peck?

4. How many square feet in the floor of a room 12 feet 6 inches long, and 10 feet 8 inches wide?

5. What will 4 cwt. 3 qr. and 18 lbs. of sugar cost at $8.00 per 100 pounds?

6. How many square feet in the walls of a room 14½ feet long, 12 feet wide, and 8 feet high?

7. From the sum of 2 tens + 8 twelves, take the sum of 2 fours + 4 twos.

8. If by working 8 days of 10 hours each, 240 pairs of boots can be made by 6 men, how many pairs of boots can be made by 15 men in 12 days, of 6 hours each?

9. For how much must I give my note so as to receive $720 at the bank, time being 1 month, and rate 6 °/o?

10. A and B go into business Jan. 1, 1883. A puts in $800, B puts in $900, and April 1, they take in C, who puts in $500. They find, Jan. 1, 1884, they have gained $1600. What amount of the gain will each man receive?

ANSWERS.—1. 29⅓ yds. 2. 34,560 gallons. 3. 32 cts. 4. 133⅓ sq. ft. 5. $39.44. 6. 424 sq. ft. 7. 100. 8. 540 pairs. 9. $723.98. 10. A 616\frac{72}{83}$; B 693\frac{81}{83}$; C 289\frac{15}{83}$.

Twenty-five thousand square miles of land have inundated in Hungary by another hurricane. At Mako, on Saturday, 11th inst., the water washed over the dykes and destroyed a number of bridges. The laborers on the dykes fled, but were driven back by the soldiers.

EDUCATIONAL OPINION.

Those who, from years of residence and observation, are capable of forming a sound judgment, unhesitatingly affirm the common school systems of the States to be palpably inferior to those of the Provinces, while the higher schools and colleges, even in Boston and a few other favored places, are but little superior. —*Halifax Critic.*

A curious book indeed, is an algebra, published shortly before the war by D. H. Hill, then Professor of Mathematics in Davidson College, North Carolina, and afterwards a Confederate general of celebrity. Professor Hill was "sectional" in his feelings, as the following problem, one out of many like it in animus, demonstrates: "A Yankee mixes a certain number of wooden nutmegs, which cost him one quarter of a cent a piece, with a quantity of real nutmegs worth four cents a piece, and sells the whole assortment for forty-four dollars, and gains $3.75 by the fraud. How many wooden nutmegs were there?—*Ex.*

What do teachers read, and what is the extent of their reading? Many read too little, a few read too much, others read nothing. Excess is better than deficiency. Nothing is more degenerating, monotonous and unbearable to a bright, active pupil, than a teacher whose general information and literary horizon are bounded by the texts of the school. A person that has never been electrified by good literature cannot develop in children a correct estimation of an Irving or a Longfellow, or stimulate the noblest elements of child life. The teacher who reads with care can often enliven and fix, with happy illustration or anecdote, an otherwise dull recitation, or with an appropriate quotation fire to white heat a generous impulse. Question teachers as to what they have read, and drive from the ranks those who, in these days of good and cheap books, have read not at all or have feasted and corrupted their minds with the frivolous and impure.—*Western School Journal.*

"I commend to you the school-teacher who cares for atmospheres, impressions and tone quite as much as for text-books, tasks, and for accuracy in recitation. I ask you to help him when he tries to make his school-room a place of neatness and brightness, with plants, flowers, pictures, statuettes, window and wall hangings, and whatever besides may give ideas of taste, of purity, of restfulness, and which will fill his soul with images and memories to go with him to the end of life, a source of inspiration and a safeguard against evil." "We have been in school rooms that were thus ornamented and beautified from month to month, from year to year. Flowers and vines graced the windows, engravings and portraits adorned the walls, statuary beautified odd niches, objects of interest and curiosity relieved the corners, a congenial and happy teacher presided, and bright children filled the room with sunshine from happy faces."—*J. H. Vincent, LL. D.*

Monseigneur Dupanloup, whom Rev. W. B Trevelyan of England calls "the greatest of all modern educators," says: "What a teacher does by himself is little; what he induces his pupil to do freely is everything; for authority is not constraint; it ought to be inseparable from respect and devotion. As for me, as long as I have anything to say to education, I will respect human liberty in the smallest child, and that more religiously than in a grown-up man, for this latter can defend himself against me, and the child cannot. We must respect the weakness, but also the power. You must win the heart of the child; but to win his heart you must love him. Without love there is no devotion in the master, no affection in the child. Be fathers and not masters to these boys; but even that is not enough—be their mothers."

"A severe, but just, cricicism of our public-school system is, that many children graduate from our grammar schools without being able to write a simple note correctly."

"A severe, but equally just criticism is, that many children graduate from our grammar schools without being able to speak their mother tongue with fluency or correctness. Is not this, then, the reason for the deficiency in writing? If a child can *speak* well, he can, with little drill, be enabled to *write* well. The key to the whole trouble in language teaching is, that two-thirds, rather four-fifths of the teachers will persist in teaching the *science* in place of the *art*.

"The weary months spent on grammar were worse than wasted; they did me permanent injury."—*President E. G. Robinson.*

"The good old days (?) when muscle to ply the birch was a teacher's only qualification; when the 'rule of three' was the *ultima thule* of all earthly knowledge, are gone forever. Teaching in these days has become a science and an art. A teacher's true mission is no longer confined to the presentation of dry facts, but has broadened to embrace the higher duties of training the mind and teaching how to think and how to study."—*Supt. W. B. Scott.*

LITERARY NOTES.

Rev. W. C. Waghorne of Newfoundland, is publishing a list of native plants in the *Daily Colonist* of St. John's, Nfld. This work speaks well for the *Colonist*, and for Mr. Waghorne. The botanists of Canada and of all countries, are interested in this work, and we hasten to announce it.

Dr. J. G. Schurman of Cornell University, and wife, are at present visiting friends in Nova Scotia and Prince Edward Island. *On dit*, that American educational literature will probably be very soon enriched by a publication which the learned Professor has had for some time in preparation.

Professor Roberts, of Kings College is writing an article on Imperial Federation. We regret that our informant has not given us the name of the magazine in which it is to appear.

Principal Calkin's "Notes on Education" is expected to be published about the 1st of Nov. The work will be invaluable to teachers who have not attended the Normal School. And to those who have—why, it will be just what they want. We have had the pleasure of glancing over some of the proof sheets.

BOOKS AND EXCHANGES.

A most beautiful and appropriate souvenier of the Queen's Jubilee is a book issued by J. & A. McMillan, containing an account of the celebration in St. John. It is compiled especially for the citizens of St. John, but is interesting to residents of other parts of the Province, and would be an elegant volume to send to friends elsewhere. The Jubilee Ode, *Carmen Acadium*, by Mr. W. P. Dole is especially worthy of a place between the handsome covers of this book. Of the merits of this poem, a gentleman belonging to a neighboring city, possessed of no inconsiderable literary and critical ability said a few days since: "To my mind it is the finest specimen of Jubilee poetry that has been published anywhere through the British Empire this year." Messrs. McMillan are to be congratulated for their enterprise and the admirable workmanship displayed in the get-up of this handsome little volume.

McMillan's Series of Copy-books, lately prescribed by the Board of Education for use in the schools of New Brunswick, appear to be admirably adapted to secure good results in penmanship The system outlined in them is practical and progressive, and fitted to gain the confidence of teachers and secure improvement in writing in the schools.

History of England for beginners, by Arabella B. Buckley (Mrs. Fisher), with additions by Robert H. Labberton, L. H. D. London: MacMillan & Co., and New York. Price $1.00. We have delayed noticing this book which has been on our table for some time, until we had an opportunity to give it somewhat careful attention. It has many excellent features, being written in an easy and entertaining manner which will charm mature as well as youthful readers. It is filled with excellent maps, illustrating the political growth of the country, and the chief wars in which England has been engaged. The excellence and variety of these maps are an admirable feature in the work, securing simplicity and giving the pupil correct ideas of the geography of the country. The history is brought down to the year 1887, and is the most useful and comprehensive compendium of English history that we have seen, combining interest and orderly arrangement.

Pestalozzi's Leonard and Gertrude: Translated and abridged by Eva Channing, with an Introduction by G. Stanley Hall, Professor of Pedagogy in Johns Hopkins University. Boston: D. C. Heath & Co., publishers; 5¼ by 7½ inches; cloth; 193 pp.; price $0.85.

"This is a carefully abridged translation, into which the gist of five large volumes is compressed. All teachers should read it with care, for it comprises within modest limits the whole substance of the Pestalozzian theory of education. In the charming, instructive and suggestive union of a capital story and a pedagogical treatise, Pestalozzi sets forth his radical, far reaching views of the true scope and end of education, as well as of the true method of attaining that end. It is this book on which his fame as an author mainly rests, and it was dictated by an earnest desire to lift up the lower classes of Switzerland—to found a republic of thought, of capabilities, of work." The first volume of the original work was published in 1781. This abridgement is very well written, and is altogether more attractive than a full translation.

Rousseau's Emile: Boston: D. C. Heath & Co., publishers. Price 85 cents. Extracts from the great pedagogic romance which in 1762 created such a sensation in Paris, and caused the author to flee from France, then from Geneva, then from Berne. Oscar Browning says of the original book: "Probably no work on the subject of education has produced so much effect as the 'Emile.'" It has also been called "Nature's first gospel on education." While the genius of Rousseau threw a blazing sunlight on the defects in the systems of education, he was not always right himself; and in practice was a failure. But the truth he spoke changed the history of education in Europe. Every educationist would like to know something of such a classic work. In the volume before us, the author's style is fairly represented in the simple modern English translation, the best passages are selected, with the result of making a very interesting epitome of only 157 pages.

Hygienic Physiology: By Dr. B. J. Dorman Steele. New York and Chicago: A. S. Barnes & Co., publishers. This is a capital book. The plates are splendid. The arrangement is logical and effective, and the leading facts are stated in a simple yet very accurate manner. There is special stress laid on the effects of alcoholic stimulants and common pernicious habits. This makes it eminently suited for school-room instruction. The whole subject is treated so plainly in this work that any teacher can master the book without any other assistance. The volume is about the same size as "Steele's 14 weeks" courses.

First Year in Latin, by George Stuart, A. M. Philadelphia: Eldredge & Brother. Mailing price, 95 cents. We must confess that it was with considerable misgiving that we opened the "First Year in Latin." The number of such books published during the last twenty years has been so great, and the absence of any new feature so marked, that we at once inferred that we must have a repetition of what has been written over and over again—a rehash of the most popular grammars at present in use. We discovered, however, on reading it through, that it possessed characteristics of its own, and that in the hands of a good teacher it would supply an excellent basis for a sound and thorough knowledge of the Latin language.

It is true that there is little that is new, either in arrangement or matter. The author claims for it the character of a "drill book," and says that "constant practice and repetition are the principles relied upon to impart that dexterity in the use of forms and constructions which relieves all subsequent translation of much of its labor and difficulty" The book is what it professes to be. Besides being clear in statement and exposition of the laws which were observed by the best writers, free use has been made of the scientific and philological investigations of the best grammarians, and abundant opportunity is afforded for exercise. We consider that no better plan can be adopted to secure familiarity with accidence and the rules of syntax than unremitting and careful practice in translation and re-translation. . If this be associated with an ever-widening vocabulary, the memory of the pupil is stored with Latin words, and the strangeness of a new language, in sound and form, in great measure overcome. This excellence it possesses in common with other very good school grammars, but it has points of value of its own for which it must be commended. It gives great, but by no means undue prominence to *quantity*. In an elementary book, as in the one before us, every Latin word, every time it occurs, should have the quantities of its vowels marked, that the pupil may be impressed with the importance and necessity of accuracy, and acquire a habit of observation which shall cling to him ever afterwards.

It is equally praiseworthy because of the reasonable amount of grammatical knowledge to be acquired. Everything presented is important, nothing requires to be skipped; and if judiciously taught there is no excessive burden imposed upon the pupil. We do not consider the sections in syntax on the subjunctive mood, oblique narration and gerunds and gerundives, at all out of place in an elementary book, but indispensable to a successful study of Cæsar, or any other Latin author, which must be read before the teacher can reach, in such a book as "Arnold's Latin Prose Composition," the part which treats of these subjects. The paradigm of *capio*, in full, is not uncalled for, for we know that blunders are not unfrequently made by good students in those verbs of the third conjugation of which *capio* is the type. The exercises on the Roman calendar and the selections from the Gallic war will be welcomed by teachers as providing an admirable means of discipline preparatory to a systematic perusal of Cæsar or Nepos.

We must admit, however, that we miss many well known rules, which we have been accustomed to regard as necessary in an elementary Latin grammar, that the examples of irregularity in the comparison of adjectives are rather limited, and that there is no complete list of irregular verbs. Yet this we do not complain of if it is understood that an advanced Latin grammar is to take the place of this one for contemporaneous study with Cæsar, Virgil or Horace. And while uncertain whether the use of heavier type to mark the case-endings and other inflections may be more advantageous than the hyphen, and that there may not be danger of confusion by the use of both *base* and *stem*, yet we have no hesitation in recommending this book as one of the best practical elementary Latin grammars we have ever examined.

THIRTEEN STORIES OF THE FAR WEST, by Forbes Heermans. Syracuse, N. Y., C. W. Bardeen, Publisher. This, as its name indicates, is a volume made up of stories of the Far West, and is suitable for holiday reading. There is a vein of humor throughout the entire series, which is equal to that of Bret Hart. The first pathetic story of "Shingles" wins the reader's attention and is of absorbing interest.

WOODWORKING TOOLS; *how to use them*; *a manual*, published by Ginn, Heath, & Co., Boston. This is a capital little work which all teachers and school boards should study in connection with the generally discussed introduction of woodwork into our public schools. There can be no better exercise for any one of sedentary occupation than the useful one of woodwork. This book with its instruction is worth a great deal of experience and a kit of tools to the bargain. D. C. Heath & Co.

HABIT AND ITS IMPORTANCE IN EDUCATION: An essay in Pedagogical Psychology; translated from the German of Dr. Paul Radestock, with an introduction by G. Stanley Hall, Ph. D., Professor of Psychology and Pedagogy, John Hopkins University. Boston: D. C. Heath & Co., Publishers. Price 60 cents.

Dr. Paul Radestock's "Habit in Education" is undoubtedly the best of this eminent author's series of brilliant psychological monographs. It is full of valuable suggestions to the educator who would aid his pupils in forming right habits. We recommend it most heartily, not only to teachers, but to parents and normal school teachers, who will find in it solid food for thought. It is an attractive book, being well printed and strongly bound, and its moderate price places it within the reach of all.

THE JURNAL OV ORTHOEPY published at Ringos, New Jersey. Fonic spelling, Eufonic words, Fitness of words. The environs ov a people mold their language. Monthly, $1.00.

THE CONCHOLOGISTS' EXCHANGE. Are you interested in the collection of shells? Then get this Exchange. Only 50 cents, monthly. Published by Wm. D. Averell, Chestnut Hill, Philadelphia, Pa., U S. A.

THE HERALD, devoted to pronunciation and amended spelling, monthly, 25 cents per annum. Address "The Herald, 125 Harbord Street, Toronto." Well worth the money.

ST. NICHOLAS for August contains a school story, "Marigold," which is admirably told, and contains a healthful lesson to some teachers as well as scholars. The heroine gets into difficulty because she is not bright at mathematics and gets out of it because she is bright at other things. In the same number is an excellent article on "How some Animals become Extinct," referring especially to some that have become extinct within the history of man.

POPULAR SCIENCE MONTHLY for August contains several valuable scientific and educational articles. Mr. C. S. Ashley attacks "Educational Endowments" and maintains that the great endowed institutions of learning have been useless and obstructive to the general march of society toward improvement. Grant Allen traces the progress of science during Victoria's reign, and there is a timely article on "Manual Training in School Education" from the pen of Sir Philip Magnus. In the third paper of his "Astronomy with an Opera Glass," Mr. Serviss describes and illustrates pictorially what can be seen in the moon and the sun with that handy little instrument. Published by D. Appleton & Co.

THE BOOKMART: Another year and volume of the "Bookmart" began with its June number. Its publishers ("Bookmart" Publishing Co., Pittsburg, Penn.) say: "Our endeavor has been to make the journal one of positive value, worthy of the time bestowed in reading and the money expended by subscribers." The July and August numbers of this unique and valuable periodical show that the aim of its publishers is being verified in the sprightly and original tables of contents which make up the new series.

THE CENTURY for August: The midsummer holiday number of the "Century" opens appropriately with an attractive paper of holiday adventure, having the piquant title of "Snubbin' through Jersey," the object of which is to report the incidents, mishaps, and delights of a unique vacation trip in a canal boat. A short paper by William Earl Hidden, entitled "Is it a Piece of a Comet?" is accompanied by accurate drawings, of natural size, of a meteorite which fell near Mazapil, Mexico, on the 27th of November, 1885, and which acquires additional scientific interest from the fact that only seven meteorites have been seen to fall upon the surface of the earth. The Lincoln History, Battle Series, Edward Atkinson's discussions on economic questions, Mr. Stockton's novel, "The Hundredth Man," are continued, and these, with poetry, illustrations, "Topics of the time," etc., make an interesting and comprehensive table of contents. The "Century" and "St. Nicholas" Magazines are published by the "Century" Company, New York.

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MICHAELMAS TERM, 1887.

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Lectures for Senior and Junior Classes begin Sept. 26th.

Examinations for Matriculation and for County Scholarships begin Oct. 1st.

The Scholarships for the Counties of Restigouche, Gloucester, Kent, Westmoreland, St. John, Queens Sunbury and York are now vacant.

Calendars sent on application to

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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SPECIAL NOTES.

Will those of our subscribers who have extra copies of June, July or August numbers of the REVIEW oblige us by returning them? Our supply of these issues is completely exhausted, and we have orders for them which must remain unfilled unless our friends who may have received additional copies can kindly help us to supply the deficiency. Those who have asked for these numbers will be furnished with them if possible. But subscriptions in future must begin with the month during which the subscription is sent in. We cannot after this undertake to supply back numbers.

When the REVIEW took the place of the New Brunswick *Journal of Education* with a wider field and with an editor for each of the three Provinces, it was confidently expected that the enterprise would eventually prove successful. But we scarcely hoped for that measure of success that has been extended to it. Though only three months in the field its subscription list already amounts to that which its predecessor reached in twelve months; and at the present rate of increase, the prospects are that this list will be doubled at the end of six months! This is very gratifying, and we feel sure that those who have assisted us by material encouragement and warm approval will feel equally gratified by this announcement. Will our friends continue their good offices and help to make the REVIEW an influence in our educational development?

Those who subscribed and paid stock to establish the N. B. *Journal of Education* have been credited with the amounts paid on the subscription list of the REVIEW. If any stockholder has not received this paper it is because a full list of those who contributed such stock was not furnished us until recently. All should receive the September number. Any omissions through change of address will receive prompt attention if we are notified of the fact.

The subscription price of the REVIEW is One Dollar a year—about eight cents a month. There is not a teacher in the three Provinces who cannot afford that sum for a good educational paper. It is an investment that will yield a rich return in the stimulus that it will give to school work. The live teacher should subscribe because the material and new methods that we seek to give each month will render their services more valuable. If it is not convenient to remit the amount of the subscription, those who wish to subscribe should order the paper and remit when convenient.

We heartily thank our very numerous correspondents of last month for their kind words of welcome in receiving the REVIEW.

Kindly acquaint us at once with any change of address or failure in receiving the paper promptly, and we shall attend to it without delay.

We hope that the teachers who assemble at the various County Institutes this fall will see that their names are enrolled as subscribers to the REVIEW. A few earnest words spoken at these Institutes in behalf of the REVIEW by its friends would be of great service.

EDITORIAL NOTES.

If you wish the Review to be sent to a friend write us a postal card, giving the address, and it will be promptly sent.

Among the resolutions passed at the session of the W. C. T. U. in St. John last week, was one favoring compulsory education.

The article in another column on the Tonic Sol-fa System is from the pen of the Rev. James Anderson, M. A. It presents a most interesting array of facts on an important subject, and we bespeak for it a careful and attentive perusal.

We expect to have a description of the new buildings of Dalhousie College at an early date for the benefit of our readers. It is being constructed after a full consideration of what is best in the most renowned Universities of Europe and America.

We feel sure that the gratification of our readers in perusing the article contributed by Chief Supt. Allison in another column will be a sufficient reward to that gentlemen for snatching some moments from the pressure of official duties, and induce him to make another "hasty promise" in the near future.

An Inspector: "The Review is too powerful an ally to have its claims ignored. It deserves not only *recognition* but the *hearty support* of every live educationist in the Province. It is performing more than it promised in the first number. I commend it to every teacher. I hope their subscriptions are coming in steadily. The editors of the Review are doing their work nobly. That their efforts may be ably seconded by the teachers all over the Province is my earnest desire."

Dr. C. Hart Merriam, Chief of Division of Ornithology and Mammology, of the United States Department of Agriculture, has published the Ornithologist's Report for 1886. The report is extremely valuable, and we shall take the liberty of referring to it at some future time. Congress makes an appropriation for entomology. In addition, $10,000 was voted last year for the information collected by Dr. Merriam's Division. This shows the value put by an intelligent government on such educational work as the Review endeavors to incorporate with the book work of our common schools.

The abolition of residence at the University of New Brunswick goes into effect the ensuing term. The utility of the step is a matter of debate. Though the arguments in favor of residence depend mainly upon sentiment, yet considerations of sentiment are sometimes weighty and far-reaching. College residence, under wholesome and wise restraints, gives a zest to student life that nothing else can supply. If the rooms that have been used for dormitories are required for lecture-room accommodation the question of sentiment should yield to that of utility. So far as we can understand this necessity does not exist; and while there are suitable accommodations, and a sufficient number of students are willing to avail themselves of the privilege of residence and do not abuse that privilege, it seems difficult to understand why it should be denied them.

We shall publish in our next issue the reports of the committees appointed to revise the courses of study for Grammar and Superior Schools in the Province of New Brunswick. These reports were laid before the Educational Institute at the meeting in July last, received, and ordered to be published in the Review, in order that those interested may have the fullest opportunity to examine the proposed courses and discuss any points therein. These courses have been a fruitful theme of discussion at the meetings of the Educational Institute for some years with but little result. Any changes in the course of study leading from the common school to the university, tending to complete our present excellent course of common school education, ought not to be deferred any longer; and in common with many teachers who have expressed themselves on this point we hope that the Institute may next year be prepared with such a course as they can confidently recommend the Board of Education to adopt.

A despatch from Ottawa states that the Gilchrist Scholarship has been won by Mr. W. C. Murray, of Kings Co., N. B., a graduate of Fredericton University. There were five competitors from Canada, four of whom are in the honors' list. This is an excellent showing for our Lower Province students, for all of them, we believe, hail from this section of the Dominion. Mr. Murray stood third on the list of competitors in the original honors' list. With such results as this, a move ought to be made to induce the trustees of the Gilchrist Fund to continue scholarship instead of withdrawing it finally, as se to be the present intention.

THE committees appointed respectively by the New Brunswick Provincial Institute and the Nova Scotia Educational Convention, in regard to the holding of an Interprovincial Convention, are obtaining information to be laid before the executive committees of both bodies. It appears to be the unanimous wish that such a convention should be held. The Nova Scotia Association at its last meeting warmly approved of the step and St. John was suggested as the place for holding the Convention. The feeling in the N. B. Institute was in favor, although there was no opportunity for any discussion of the matter. It remains for the Prince Edward Island Convention, which assembles in October, to take action. We see no serious obstacle in the way of such an interprovincial gathering. If arrangements can be made for a time convenient to all, and to arrange for the holding of sessions of each Provincial Association for the transaction of their legitimate business, the most pressing difficulties would be overcome. Some sacrifices may have to be made, but they will be slight in comparison with the great good that will result from the meeting; and we feel confident that when the time comes to make the final arrangements no obstacle will be regarded as insurmountable.

ENGLISH IN SCHOOLS.

It is a chronic complaint that the ordinary subjects which form an English education are not efficiently taught in our schools; that pupils leave even the higher grades totally unable to write a sentence in an easy, intelligible style, in a fair hand, and devoid of ordinary blunders in syntax and spelling. Are these and such statements facts or exaggerations? If the latter, it ought to be an easy matter to disprove them and correct an error, the repetition of which must be productive of harm. If there is any foundation in fact for such statements, there should be an honest effort—immediate and general—to substitute for our present methods of teaching English, others that would secure better results.

Let us grant at the outset that there is some ground for the statement that the majority of students leave school without the ability to express their thoughts in clear, well-formed sentences, free from ordinary blunders in spelling and syntax. That the ability to write finished sentences requires careful training and a very considerable amount of practice is very evident. As a matter of fact poor composition is not confined to the pupils of our schools—it is very general even with those who have had the advantages of a fair education, and considerable experience in writing. This may be the result of defective training. And this defective training is not confined to the schools of these Provinces. A few years ago the Superintendent of Education for Massachusetts gathered and tabulated the results of an examination, the purpose of which was to ascertain how many pupils of schools throughout the State could express themselves in a few simple off-hand sentences. These results were marvelously suggestive of what could *not* be done, and in the great majority of cases showed that the efforts to teach the important branch of English composition were a lamentable failure, at least so far as practical results were concerned. We wonder if the test of the ability of pupils a little nearer home would be productive of better results. We fear they would be far from satisfactory, except in the case of pupils with a natural aptitude for English composition. In the great majority of children this aptitude does not exist. Does our present system of teaching beget a taste for English composition, and tend to develop a pupil's powers in that direction? So far as we have observed we believe that it does not.

As the limits of this article will not admit of a full discussion of this point, we shall confine ourselves to a few of the ordinary methods of teaching English grammar and composition.

Take an examination paper given to pupils in the higher grades of our schools, in order to form an idea of the line of teaching which prevails. It has many questions of theory, many definitions of terms, many nice points of grammar to be decided upon; some sentences of improper syntax to be corrected and the rule given, while a large portion of the paper or papers is devoted to analysis and parsing. The essential requirement—that pupils give expression to their own ideas on given subjects—is an exceedingly small factor in the paper. Now it is evident to a thoughtful person that this condition of things should be reversed, that a greater amount of practice and less of theory should be required of pupils. If they have been given a great deal of practice in writing sentences in the lower and intermediate grades, a portion of their work in the higher grades may very profitably be devoted to the study of the principles of grammar and their application by means of analysis and parsing. That pupils have had that amount of practice that will enable them to express their thoughts with tolerable ease and fluency is questionable when we compare results. Why, then, give them sentences to analyze—to take apart, when the rational and common-sense plan ought to be to teach them to compose—to build up sentences. Another source of mischief in teaching English composition is to place before pupils incorrect expressions and require these to be corrected. If their reasoning powers are not sufficiently matured they will be just as likely to retain and use the wrong form as the right one. The observing teacher will notice every day that while a pupil is able to recite a rule glibly, and apply it correctly, he betrays a total disregard for it the very next sentence he speaks or writes. This results from the want of careful and long continued practice. In order, then, that pupils may compose with accuracy and correctness, they must have a maximum of practice with a minimum of theory, patient correction of errors on some systematic plan, good models of English composition constantly placed before them for their imitation and encouragement. When it is impressed on the educational mind that our present methods of teaching English, especially composition, are defective, and that better and more natural methods are called for, better results will be obtained.

NOVA SCOTIA SUMMER SCHOOL OF SCIENCE.

The following are the principal points decided upon at the annual meeting of the Directors of the Nova Scotia Summer School of Science:

The Directors shall consist of the School Inspectors of Nova Scotia, the Supervisor of the Halifax schools, the Faculty of the Provincial Normal schools, and the Faculty of Instruction elect for the year.

The Faculty of Instruction were elected as follows:

Principal A. H. MacKay, F. S. Sc. (Lond.), President and Lecturer on Zoology.
Professor A. E. Coldwell, M. A., Geology.
Professor F. H. Eaton, M. A., Chemistry.
Inspector E. J. Lay, Esq., Botany.
A. J. Pineo, A. B., Mineralogy.
Inspector A. G. Macdonald, M. A., Physics.
Dr. John Stewart, M. B., Physiology.
Professor J. B. Hall, Ph. D., Sec. and Treas.
J. D. Sprague, Assistant Secretary.

The school will meet next summer at Pictou. To encourage home work during the year, it was proposed to grant a "first year certificate" to students passing a certain standard in each subject or group of subjects.

Such examinations would be entirely optional, would take place during or at the close of the lectures, and would be conducted in three sections in each subject. 1st Section, on book work—the theoretical; 2nd Section, on manipulation—the practical; 3rd Section, on collections—the practical. Something like the following syllabus was suggested:

ZOOLOGY (300 marks, maximum).—
- 1st Section—Classification down to *orders*, with common examples, as in Dawson's hand book. Examination in writing. Paper: 100 marks.
- 2nd Section—Dissection of any 15 type species, as in Colton. Examination oral and practical: 100 marks.
- 3rd Section—Collection of any 50 mounted and classified species of Nova Scotia, including insects or microscopic slides. Examination ocular: 100 marks.

BOTANY.—
- 1st Section—Gray's "How Plants Grow," Part I. Examination in writing. Paper: 100 marks.
- 2nd Section—Dissection of any 15 type species not figured in the book, with outline drawings of characteristic parts of each; and determinations of new plants with the aid of a key: 100 marks.
- 3rd Section—Collection of any 100 mounted and classified plants of Nova Scotia: 100 marks.

MINERALOGY.—
- 1st Section—"Common Minerals and Rocks," (D. C. Heath & Co.): 100 marks.
- 2nd Section—Determination of 15 common species, by blowpipe or otherwise: 100 marks.
- 3rd Section—Collection of 50 Nova Scotia species: 100 marks.

And so on with the others. It was proposed to offer prizes for the best and simplest home-made apparatus for illustrating elementary chemistry and physics. The matter was referred to a committee.

PICTOU.

The locus of the next session of the N. S. Summer Science School, is a very appropriate selection for such an institution. The first and only great struggle for untrammelled higher education in Nova Scotia took place there. Its Academy has very fair conveniences for scientific work. The town, being accustomed to provide boarding accommodations for a large number of students, will without effort accommodate a large attendance at the Summer School during the academic vacation. Its rail and water communications give the easiest means of access to it from all parts. The carboniferous formation is well represented, with the finest coal mines in America only a few minutes distant by rail. The Boar's Back, of post-glacial age, is within a mile, and another mile will take in a freestone quarry. The Silurian fossiliferous coast of Arisaig might be touched by steamer—or the new red sandstone of Prince Edward Island. The glass works and steel works of Trenton are only across the harbor, whose clear, blue water can match Killarney with a proper sky. And under the sun-dazzling heavens there is no better spot for boating and bathing. The flora and fauna think themselves second to none other on the continent; and it is expected that the botanists and zoologists of the School may come to the same conclusion.

RESULTS OF ARBOR DAY.

Inspector I. B. Oakes contributes an article to the Woodstock *Press* giving some results of the observance of Arbor Day this year throughout New Brunswick. In his own district, which embraces York and the greater part of Carleton, over 2,000 trees were planted, in addition to 1,600 set out in 1886. This is a total of over 3,500 trees, which, with planting shrubs, laying out of flower beds, clearing the school grounds of rubbish and fencing them, and a thorough cleaning of school houses, show excellent results.

Inspector Mersereau, who traverses Restigouche, Gloucester and Northumberland counties, states that the teachers and trustees were very enthusiastic in their efforts, and though he had not at the time added together the results, he thought that some thousands of trees had for the first time been planted on the school grounds of this large inspectorate; also many shrubs and flowers; while in nearly every case the school house was cleaned, and other improvements made upon the school premises.

Inspectors Smith, Wetmore and Carter report a large number of trees planted in their districts, and also that school grounds have been greatly improved and ornamented. In addition to these practical results of Arbor Day, the attention of parents and children throughout the Province has been directed to this subject, and a most commendable spirit aroused on the subject of tree culture and preservation. Let this spirit be fostered in all possible ways, and let special pains be taken this fall to protect for the winter what has already been accomplished with so much zeal and enthusiasm.

AN EXISTING EVIL.

Inspector McLellan, of Pictou, writes in his report to the Superintendent of Education:

> Evidences of progress and efficiency of management are generally in inverse ratio to the frequency of changes of teachers. It is rare to meet with a school in which the same teacher is employed for the second term or for a longer period, without noting substantial progress. I do not hesitate to assert that, as far as my observation extends, the greatest single retarding cause in our schools is the frequent change of teachers. I could point to scores of schools in which I have been unable to bring about any appreciable improvement in classification, owing to this cause alone. During the winter term of the past year, 78 teachers removed to new sections and 36 were new teachers; in the summer term 77 removed and 19 new teachers were employed. That is to say, 114 schools in winter and 96 in summer were presided over by teachers who had to acquire their first experimental knowledge of the schools under their charge during these terms. When we consider that, of the 221 teachers employed in the winter, and 237 in summer, in this district, 70 were employed in graded schools where engagements are, as a rule, much more permanent, we are able to form an estimate of the extent in which changes are made from term to term in our miscellaneous schools. I do not overestimate the number when I say that in two out of every three of the country schools in this district a new teacher is employed each term. Some remedy should certainly be devised for this evil. The only adequate one that suggests itself to me is to do away with the two term system and substitute a single term of ten months. Any disadvantages incident upon this change would, in my humble opinion, be more than counterbalanced by the increased efficiency arising from the continuous services of teachers for such a period. Some of the advantages that would, I think, result from the change are: (1) Increased annual attendance of pupils. Much time is lost in the latter part of each term by intending pupils postponing the date of their entrance till the beginning of the new term. This is especially true of the summer term. Our academies and high schools lose at least 50 per cent. of their attendance from summer vacation to November 1st. (2) Increased efficiency of inspection. With the large districts now placed under the supervision of each inspector, and the corresponding quantity of clerical work necessitated, the time remaining for the actual work of inspection is short. With an annual term the office work would be very materially lessened, allowing more time for visitation. (3) It would avoid the loss of at least weeks of effective work and, as already pointed out, would give much better educational results for the year in those schools where, under the present system, changes are made every term. (4) It would afford teachers more time in which to secure situations, and trustees both better opportunity and additional motive for making judicious selections.
>
> The adoption of a single term would not preclude a change of teachers during the year where necessary. The great desideratum is to make yearly engagements the rule. Payments of government grant and county fund would, of course, have to be made semi-annually. All the data necessary for the first half yearly payment would be a statement of the number of days taught, and the grand total days' attendance made in each school, attested by the teacher as in the case of the annual return. The Government grant and County Fund sheets to be filled by Inspectors at end of each term would require two additional columns, one for the "Amount paid at end of half term," and the second for "Balance due Teacher or Trustees." Any error in the half-yearly statement would thus be corrected at the end of the term. The dates for the opening and closing of a yearly term that would suit the majority of the schools in this district are, I think, the middle of September and the middle of July."

Our experience leads us strongly to endorse Inspector MacLellan's views. There are two sides to the question, we are aware, but the one term system for the year, with perhaps three sub-terms, we are strongly inclined to think a better arrangement than the present one in Nova Scotia.

For the Review.]

OPENING OF THE PROVINCIAL NORMAL SCHOOL OF NEW BRUNSWICK.

In consequence of the change in the length of sessions, work did not begin in the Normal School at Fredericton so early this season as it has done for several years past. After three years of short sessions or terms, of scarcely five months each, it has been found desirable to return to the system of nine-months terms, with which, of course, is connected only one examination for license in the year, instead of two. The six large classes of student teachers trained (?) and licensed during the last three years have not only filled the places of all the holders of local licenses (except in certain French districts), but furnished more than an ample supply to meet the ordinary demand for teachers. Although the numbers in attendance under the long term arrangement may be less for a year or two than when the terms were only one-half as long, still, it is believed that the Normal School will, in the course of two or three years at most, send out a sufficient number of teachers annually to fill all vacancies and supply all new schools.

The entrance examination took place on the 1st and 2nd days of September, inst., and the results were announced on Monday morning, the 5th. Of 124 applicants who presented themselves, 74 made the required average of marks and were admitted; 32 others were admitted conditionally, two of whom preferred not to remain, and 18 failed to pass. Of those who came forward on the 6th, claiming admission without examination, 13 were admitted on departmental certificates of Standard VIII.; 5 as holding certificates of matriculation at the University; 2 as holding valid licenses, and 1 as a graduate in arts. Nine applicants presented certificates which did not entitle them to admission, but these were admitted on supplementary examination.

The formal opening exercises of the school were held on Friday, the 9th inst., commencing at 2.30 p. m. On the platform were the Chief Superintendent who presided, His Honor the Lieut.-Governor, Dr. Harrison, President of the University, the Principal and Staff of Instructors of the Normal School, and the four Teachers of the Model Departments. In the course of his opening address Principal Mullin read the following statistical statement:

CLASSIFICATION OF STUDENT TEACHERS ENROLLED.

I. *By Counties.* Albert, 4; Carleton, 11; Charlotte, 17; Gloucester, 5; Kent, 11; Kings, 6; Madawaska, 2; Northumberland, 8; Queens, 5; Restigouche, 5; St. John, 22; Sunbury, 6; Victoria, 1; Westmorland, 8; York, 32; (P. E. I.), 1; (Newfoundland), 1; total, 145.

II. *By Religious Denominations.* Baptist, 27; Church of England, 13; Free Christian Baptist, 14; Methodist, 31; Presbyterian, 34; Roman Catholic, 23; Others, 3; total, 145.

Young men, 20; young ladies, 125.

English department, 134; French department, 11.

Admitted on examination, 113; otherwise, 21. 134, English department.

Chief Superintendent Crocket cordially welcomed the students to the institution, and addressed them upon the true character of the work before them. "The New Education," so-called, was not new in its principles, but had come down to us from the ancient ages. They should ever seek to gain an intelligent apprehension of the subjects brought before them, and to lead their pupils to the same. Ideas were before words. True study was not mere learning.

Sir Leonard Tilley, in his genial way, spoke of the educational progress of the last thirty years, and expressed his conviction that the affections of children must be trained as well as their intellects. Teachers should lead by cords of love rather than seek to drive with the rod. Speaking as Chairman of the Board of Education, he welcomed the students to the privileges of the Normal School, and in closing said the garden and grounds of Government House would always be open to them on Saturdays, and also the conservatory in the winter months.

President Harrison followed His Honor's kind invitation by inviting the students to visit the grounds of the University, and also the library, museum and observatory, at such times as might be fixed by Principal Mullin and previously made known to him. He said he regarded the acceptance by the Normal School of certificates of matriculation at the University as a token of the goodwill of the former institution towards the latter; and that this goodwill would be reciprocated by the University in admitting holders of first-class licenses to the second year's classes in college, upon their passing a satisfactory examination in the classics.

The student teachers, who had sung the national anthem, as usual, on the entrance of the Lieut.-Governor, now sang, very appropriately,—

> "For the blessings that surround me,
> Thanks to thee, my native land!"

After which the Principal thanked the visitors for their presence, and for the interest manifested by the citizens generally in the welfare of the school. Having sung the dismission hymn, the student teachers marched to their class-rooms, and the proceedings were at an end.

FERNDALE SCHOOL.

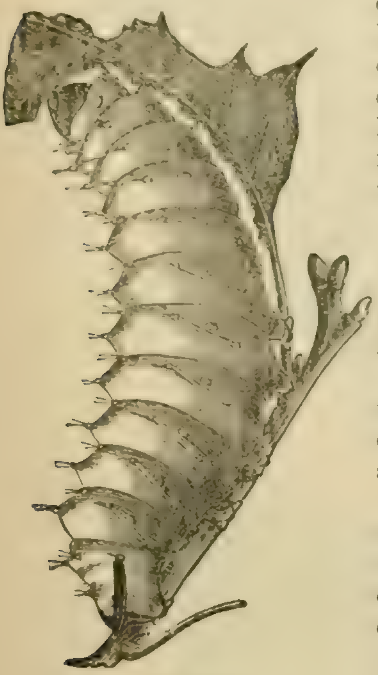
No. IV. A CANADIAN SILKWORM MOTH.

(*Telea Polyphemus*, Linn)

TEACHER. See this large September caterpillar eating a leaf. Do any of you recognize it?

SCHOLARS. Yes, larva of the Cecropia Emperor-Moth.—No, it's different—quite different, except in size.

T. You are correct now. We have not examined this caterpillar before. It is called the "American Silk Worm," because it is the only native American caterpillar which has been extensively reared on account of the silk it produces.


THE LARVA.

S. Was it found in this country?

T. Yes; Jack, tell us where you found it.

JACK. On a plum tree, and I saw one eating the leaves of a rose bush once.

T. They are often found on oak trees and sometimes on the maple and elm. But now let us describe it. How long is it?

S. About three inches. It eats very fast and its jaws move sideways instead of up and down.

T. Very good. They all eat in that manner. This great caterpillar was hatched probably in June from a small roundish egg about the tenth of an inch in diameter. When hatched it would take about six thousand of them to weigh one ounce. It eat, and in ten days grew ten times as heavy; in twenty days, sixty times; in thirty days, six hundred and twenty times; in forty days, one thousand eight hundred times; in fifty-six days, four thousand one hundred and forty times its original weight, very probably. At least such is the history of one of them. It eat three-quarters of a pound of leaves to grow to that size, and changed its skin five times.

S. Do they lay many eggs?

T. The female moth lays between two hundred and three hundred, probably.

S. It should be easy for us to raise silk, then, in Nova Scotia.

T. Not so easy. An ichneumon fly and some other flies are its deadly enemies. A Mr. Trouvelot had a million of them growing on bushes in a five acre field in the United States, but there was a net over every bush.

S. How long do they keep on growing?

T. In less than a fortnight the eggs are hatched, and in a little over two months after it will be like the specimen before us, ready to spin its cocoon. But tell me what you see yourselves now. How many rings or segments, as they are called, in its body?

S. Thirteen.

T. How many legs has it?

S. Three small pairs in front, four broad pairs in the middle, and a pair at the end, like those of the Cecropia caterpillar.

T. The color of its head—

S. Is brownish.

T. Of its body—

S. A light, yellow green.

T. On each segment there are several reddish tubercles with hairs—how many on each?

S. Six.

T. Find the spiracles, or breathing pores, one on each side of each segment. They are of a pale, orange color. What else do you see?

S. Seven slanting lines of a yellowish color on each side, and a brown V at the end.

T. We shall put it into this large jar with fresh oak and plum twigs, when we shall see it collect some leaves into its cocoon for an outer covering—drawing the leaves together with its silken fibres, which it forms like the Cecropia caterpillar. This is what the cocoon may be like when finished.

In a few hours it can hide itself, and in four or five days it will have finished its inner case. These silk fibres by proper treatment can be unwound from the cocoon in one long unbroken fibre, only a little coarser than that of the more common silk worm of commerce. Three or four days after the completion of its cocoon it sheds its old skin, and becomes a chrysalis or pupa within its well constructed, silken, double-walled chamber, in which it passes the winter. Here it is.

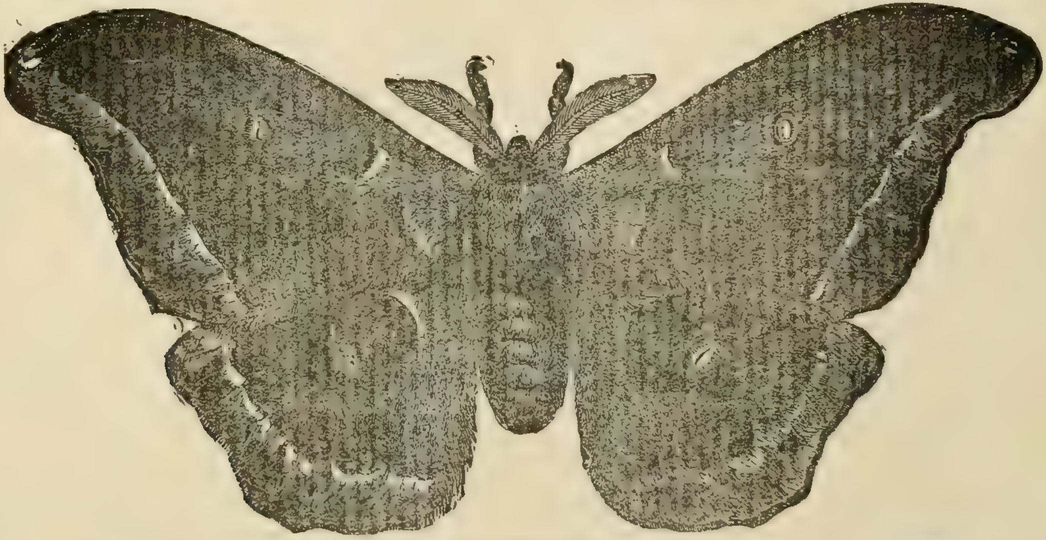
THE COCOON.

THE CHRYSALIS OR PUPA.

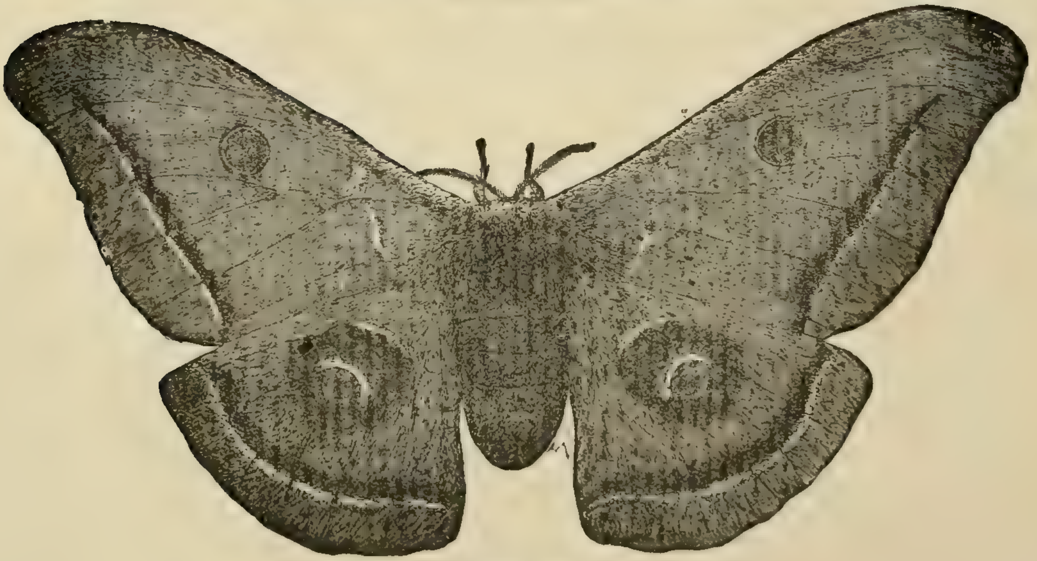
About the first of June, next year, the perfect insect will find its way out as did our Cecropia moth, Here they are figured. Try to make an outline drawing of them. Let us look at the specimens you caught last June. What is the general color of their wings?

S. A sort of yellowish brown, some are of lighter and some of darker shades.

T. Now describe the lines, beginning with the base of the wings.



The Imago (*Male.*)



The Imago (*Female.*)

S. At the base an irregular whitish band, with reddish edges. Near the margin is a purplish white line bordered with deep brown.

T. The spots—

S. The spots are like eyes in the middle of each wing. Those on the front wing are rounder with yellow and black edges. Those on the hind wings are more eye-like, bordered with yellow, with a line of black, edged with blue above, the whole surrounded by a large oval spot of brownish black, with some blue specks.

T. Pretty near it. Point out some difference between the male and the female.

S. The eye-like spots on the wings show better in the female. Its body is larger and its antennæ are more slender.

T. The antennæ of the male is very bushy—more properly, pectinated, which means "comb shaped," from the Latin, *pecten*, a comb. You will notice that the colored dust which paints these wings is simply colored, generally two or three tooth scales, as seen under the microscope. These scales might be brushed off, then the wings would lose all this beautiful coloring. All insects of this kind belong to the order *Lepidoptera*, from the Greek words *lepides*, scales, and *ptera*, wings. When the antennæ have knobs on their ends we call them butterflies; when they are pectinated, or when they have no knobs on their ends we call them moths.

S. I never saw any of these moths flying about.

T. Very likely. But the boy who caught our specimens may tell us why; well, Jack.

JACK. They fly only at night, and sometimes make as much fuss as a bat.

T. Linnæus named this moth *Telea Polyphemus.* We shall write this name on the label pinned below our specimens, as this is the name by which it is known by entomologists in every part of the world. Polyphemus was one of the fabled Cyclops, a huge cannibal giant living in a cave. He had only one large eye in his forehead. The Greek wise man, Ulysses, saved himself and several of his companions from this monster by putting out his single eye. Each wing of this moth has a single eye. Hence the origin of its specific name—Polyphemus.

AMONG THE CONSTELLATIONS.

No. I.

> "He who would scan the figured skies,
> Its brightest gems to tell,
> Must first direct his mind's eye north,
> And learn the Bear's stars well.
>
> ANON.

So, out let us rush, the first clear September night after the REVIEW comes to hand, say about nine o'clock. The moon will not be up then to pale the glories of the sparkling sky jewels. And the Great Bear, *Ursa Major,* will be crouching just over the northern horizon, with her great three-star tail swinging up to the northwest. Its ethereal outline is too unsubstantial to make out at the first trial, so with the flaming sword of imagination let us slash down the sky just a little west of the north point, and we shall cut it in two, the shoulders and head to the east, the hind half to the west. This hind half —the tail and half of the body—includes quite neatly that group of stars called the Dipper. Four stars mark the outline of the Dipper, and three stars extending to the west make its handle, which is also the tail of the bear. These seven stars have been known under various names, such, for instance, as Charles's Wain, the Plough, David's Car. The quadrilateral of four stars form the body of a plough, or the four wheels of the wain or car, while the three stars form the handle of the plough or the single shaft or pole of the wagon or car. One pious writer, Kircher, sees in the four stars the bier of Lazarus, and in the three stars of the tail of the bear, Mary, Martha and Magdalene. The poet Schiller saw Peter's ship on the sea of Galilee typified in this cluster.

The two front stars in this group are called the Pointers; because if a line be drawn from the lower through the upper, and produced five or six times their distance, it will pass near a solitary star of the second magnitude called Polaris, or the North Pole Star, the height of which above the horizon is nearly exactly equal to the latitude of the place where the observation is made.

The stars of a constellation are named by astronomers after the Greek letters. But the most conspicuous stars are also known by their older Arabic names. The highest of the two pointers, Alpha, is called *Dubhe,* the lower, Beta, *Merak.* Gamma, the other bottom star of the Dipper, is *Phecda.* Delta, the top star of the body of the Dipper from which the handle starts, *Megrez.* Epsilon, the next star, *Alioth.* Zeta, the middle star of the handle, *Mizar.* Eta, the last star, *Alkaid* or Benet-*nasch.*

Mizar is a splendid double star, the companion being a bluish telescopic star of the eighth magnitude. *Alcor,* of the fifth magnitude, is a short distance from Mizar when seen through a telescope, and may be seen with the naked eye extremely close to it, the two appearing as a double star. Six of the stars of the Dipper are classed as of the second magnitude. Delta (*Megrez*) being of the third.

About eleven o'clock, middle of September, the two pointers will be nearly vertical over the exact northern point of the horizon, and, of course, directly under the North Pole star.

> "Take the glass,
> And search the skies. The opening skies pour down
> Upon your gaze thick showers of sparkling fire;
> Stars crowded, thronged, in regions so remote,
> That their swift beams—the swiftest things that be—
> Have travelled centuries on their flight to earth.
> Earth, Sun, and nearer constellations! What
> Are ye amid this infinite extent
> And multitude of God's most infinite works?"
>
> HENRY WARE.

THE PLANETS FOR SEPTEMBER.

Venus is evening star until the 21st, then morning star.

Jupiter is evening star, and is in the constellation Virgo, a little east of the bright star Spica.

Mercury is morning star until the tenth, then evening star.

Saturn is morning star, and is in the constellation Cancer, and not far from the star Pollux, which is to the northwest, nor from Procyon which is southwest of it.

Mars is small, and about four moon breadths from Saturn Sept. 1st.

The moon passes by Mars on the 14th, by Venus on the 17th, and by Jupiter on the 20th. The other planets are not favorably situated to be seen.

NATIONAL EDUCATIONAL ASSOCIATION OF THE UNITED STATES.

The editors of the EDUCATIONAL REVIEW — a journal for which I both desire and anticipate a most successful career—have asked me to furnish in some detail impressions produced by the recent meeting of the National Educational Association of the United States, at Chicago. The subject is a worthy one, demanding for its proper treatment time and care; but I can send only a few hasty jottings, with the hope that they will be accepted as redeeming a somewhat hasty promise.

By way of preface: I was fortunate enough to secure passage in the special train of Pullman cars which conveyed the great body of New England delegates from Boston to Chicago. If education be not a fraud, one does not often fall in with a caravan transporting such a weight of wisdom as did those eleven superb "sleepers," which in two days and nights carried us through Massachusetts, Vermont, Quebec, Ontario, Michigan, and little corners of Indiana and Illinois, into the most wonderful city of this wonderful continent. "All classes and conditions" of the educational service were represented in our company of nearly four hundred souls—college presidents, principals, professors, superintendents, and a solid contingent of "the rank and file," in which, as is usual now-a-days, the "fair women" outnumbered the "brave men" three to one. I see that I have omitted to specify "the Generals," of whom we had two or three, one combining with that august military distinction the reverend appellative of D. D., and the principalship of one of the leading New England Normal schools!

An exceedingly well arranged and well appointed excursion was that! A courteous official of the Grand Trunk accompanied us throughout the entire journey, and both personally and through his subordinates, anticipated every want. On the whole route but one meal had to be taken at the ordinary railroad restaurant, such hostelries as the Windsor and St. Lawrence Hall, at Montreal, and the Queen and Rossin at Toronto, opening their doors to the hungry pedagogues at most moderate rates.

The first impression produced by the Association itself was that it was a huge affair; so large, indeed, as to threaten to become unmanageable. The central location of the city where the meetings were held, exceptional travelling facilities, and the growing influence of the body itself, combined to attract an attendance far surpassing that of any previous session. It was authoritatively announced that upwards of ten thousand teachers were recorded as present! Soon, however, I had the pleasure of seeing that if any danger of disorder or disintegration existed it must have its basis in the mere fact of *number*; nowhere could one discover any visible lack of earnestness or enthusiasm. In every quarter there was abundant evidence of a controlling unity of purpose and aim.

The opening session was held in the great hall of the Exposition Building, that famous scene of momentous political gatherings, where Blaine and Cleveland, and so many other Presidential candidates have been nominated for either victory or defeat. This meeting was of a more general character than any that followed. How many were crowded into that vast hall, with its far-reaching spaces and enormous galleries, I cannot say. The papers of the next morning variously estimated the attendance at from fifteen to twenty thousand. A gentleman beside me remarked that he had never seen the hall more crowded at one of the great political conventions. But the occasion was one perhaps better fitted to arouse enthusiasm than to promote intellectual edification. For the opening hour Thomas' splendid orchestra lent to the gathering the inspiration of music. Then came a gratifying display of the pride taken by the American people in their system of public schools. The state, the city, and the county, through their representative officials, all came forward to welcome and do honor to a profession to which the progress of American civilization owes so much. The literary exercises, while intrinsically excellent, were somewhat marred in their immediate effectiveness by the intense heat—for, unfortunately, the sessions of the Association synchronized with the hottest week of the hottest summer the western prairies have ever felt—by the rustling of ten thousand fans, and by the difficulty of hearing involved in the vast distances of the great auditorium.

The regular work of the Association was mapped out somewhat thus:

1. During the morning and evening sessions the Association met as an integral body and discussed the general questions of the programme. Each of these questions was brought forward by some five or six speakers, each dealing with some one of its special aspects or relations. These general heads included such lines of thought as these: "The Psychological and Pedagogical Value of the Modern Methods of Elementary Culture;" "The Relation of the University, College, and Higher Technological Schools to the Public System of Instruction;" "The Means and Ends of Culture to be Provided for the American People beyond the Ordinary School Period;" "The Place Manual Training should occupy in a System of Public Schools;" "What can be done by Educators to

enlighten and arouse the people, and excite public sentiment in favor of Education?"

The chief papers discussing these general topics were followed by brief "talks" or "discussions" on the same lines, from certain selected speakers to whom proof sheets of the larger essays had been sent.

2. The afternoon sessions were devoted to what was technically called "departmental work." That is to say, the Association met in separate sections to consider practical questions and matters of detail more minutely than was possible at the general sessions. The latter were held in the Central Music Hall, a spacious and well appointed auditorium; for the former, halls, theatres, church vestries, and opera houses were utilized, according to convenience of location.

I attended as many of these "department" meetings as I could consistently with the physical maxim, "a body cannot be * * *," and was much interested in all that I saw and heard. It was here that the expert and the specialist had fullest swing, and this fact needed to be borne in mind by one who, like myself, has to keep an eye for all sides of the educational problem. Listening to the enthusiastic exposition of the kindergarten system, you would for the moment be led to regard no human being outside of babydom as of much account, while the enthusiastic advocate of manual training declaims under a seeming conviction that, as educational instrumentalities, the blackboard and dictionary are but poor affairs as compared with the auger and the turning-lathe. But on reflection one is soon led to see that in the wide world there is room for all these experts and specialists—*extremists*, if you will—and that there is work for them to do in contributing to that salutary equilibrium of force which in some ages of the world has been sadly lacking.

Most of the papers presented at the regular sessions were exceedingly able productions, though one or two fell conspicuously below the general level. Dr. Angell and General Francis Walker, Presidents respectively of the University of Michigan and of the Boston Institute of Technology, most creditably represented the higher institutions of learning, and eloquently deplored the lack of harmonious connection too often existing between the American College and the American Public School.

The discussions that moved directly along the line of public education, and considered its pending problems, were in a marked degree free from dogmatism. While defects were pointed out and dangers recognized, their general tone was confident and hopeful. As the great gathering came to an end, and the thousands of teachers turned their faces eastward, westward, northward, southward, it was felt that the noble cause, under whose banner they had met, was stronger than ever in their hearts and in the hearts of the people.

I have been in too much of a hurry to be brief, and so have not left myself space to do more than mention the admirably planned and admirably executed educational exhibit that formed, I suppose I may say, an integral part of the Association. The personal courtesies received from the President, Mr. Sheldon, editor of the well-known *New England Journal of Education*; the Secretary, Professor Canfield, of Kansas, who has intimate personal friends in my own city of Halifax, and other members of the Association, can never be forgotten. D. A.

CURIOSITIES AND MONSTROSITIES IN SCHOOLS.

My avocations have led me to see much of schools. It may be interesting and instructive to teachers if I give a few examples of the many things I have thus seen and heard. The experiences which I shall record will not extend backwards beyond the educational renaissance of which we are wont to boast: the "dark ages" are therefore excluded.

A few years ago I visited a Normal School, and was present at a class exercise in English grammar, and another in geography, each of an hour's length. In both cases the teacher—or professor, if you prefer—held a book in his hand and asked questions from it, just as pedagogues did when you and I were boys. The pupil-teachers answered the questions that the teacher put to them from the elementary works from which the lessons had been assigned. I thought as I saw and heard, that the conservative element would still preserve the world from dangerous revolutions.

I once visited a collegiate institution and was, by invitation, present at a lecture, so called, in history. The exercise was of this kind: Some few paragraphs had been assigned as a lesson to be studied. Questions were asked by the professor (?), as in the case before instanced, and occupied fifteen minutes. The remainder of the hour was spent by the college officer in reading to the class from a new book he had just received on some branch or other of history. I thought—well, it is no matter what I thought. The world consists of two classes: the first achieve greatness; on the second greatness is thrust! In one way or other you or I may yet be a professor! There are "chapters of accidents," and "the most unlikely things always happen."

I visited one of the common schools of the country, supported in part from the public treasury. On the walls were conspicuously hung cards with passages from a catechism. This surprised me, and I made some quiet inquiries of the teacher about the circumstance. She had many qualities desirable in a teacher; but her reply to my questions rather astonished me. "You know," said she, "that what is on the cards is not true; but I am required to teach it." I do not know how she knew that I "knew" that the cards were the vehicles of error. The same clairvoyance might have taught her that I considered it very wrong for her or any one else to teach what was known, or even suspected, to be false.

I once visited, in company with a school commissioner, a number of schools, in which a foreign language was a substitute for English. The law made no provision for the substitution; but the government was too "wise in their generation" to interfere, and so the books prescribed by the Council of Public Instruction had been relegated to retirement and dust. The children, small and large too, in many cases, supported their trembling steps in reading by the aid of a pointer—half of an iron or steel knitting needle! This was the method of reading. There were no pauses, except perhaps in the body of the words, from the beginning of the line to the end of it, when custom and the teacher alike allowed of a stop. This lead me innocently to remark to the commissioner that the children did not seem to understand what they read. "No," said he, "they don't, but when they become older they will." I think it doubtful whether the charitable assumption would ever be realized, for it was the "Lives of the Saints" that was the reading book.

Once again: It was my lot to ascertain and report as to the educational status of a young lady of some sixteen or seventeen summers, who had been generally at school and had studied at a ladies' seminary for a couple of years, and who was, withal, of fair intellectual powers. In accordance with my instructions, I was to decide as to what was her knowledge of the elementary branches. I found that in arithmetic she was much perplexed with numeration; and that she could not explain and did not know why it was that she "borrowed" in subtraction. It was just so with reading and elocution, with grammar and analysis, and so throughout the scale. We conclude, then, that there are accredited ladies' seminaries which one may attend for years, and yet know next to nothing—for which knowledge they must pay hundreds of dollars.

One of my strangest experiences in this field was the hearing of a lecture on education by an educational officer, one of whose duties it was to instruct and enlighten the country on educational matters. The lecture was designed to show what education was; and the lecturer would begin at the beginning, and lay his foundation. The foundation was the derivation of the word, and consequently, according to the lecturer, its true meaning. This is a misleading assumption, but my present business is not to show it. We were informed, and with great unction, that the word education was derived from "the Latin, *educo*, to draw out," and that this was precisely what was meant by education—the drawing out, or unfolding, as it was explained, of the faculties of the mind, etc., and the assurance was iterated and reiterated till the dullest could not but understand and the most treacherous memory retain the words or the sentiment. And the great man never suspected that he was in error—that his foundation was false and the superstructure erected upon it delusive—but was evidently greatly pleased with his performance.

Once more, and I am done: On a certain occasion as I entered a school—it was a public school—I heard a little girl reciting the Lord's Prayer in Latin. As it was an unusual occurrence, I listened with interest; nor was my interest diminished when I found she gave every word correctly and without a single slip, even the slightest, in the pronunciation. There were reasons which led me to conclude that she did not know the meaning of the words she was uttering; but I thought I would ask the teacher—more, however, for the sake of hearing the reply than for information. The response was—"Oh, no, she does not understand it." Do not let us blame the little girl, or even her teacher, who was herself ignorant of Latin; lest in doing so we condemn ourselves. Is it certain that we quite understand all that is contained in the Lord's Prayer—or, "leaving the first principles" of religion, whether we more than half comprehend what is embraced in the creeds we respectively profess to hold—or, to proceed still further, whether we have a very clear conception of any of the branches about which we talk so complacently and so learnedly? At least we have it on record that a wiser man, and a more profound scholar than any of us, thought very lightly of his attainments. It is not necessary to quote his language, for the words are "household words" in all our families and schools. The dear little child reciting the Lord's Prayer in Latin, and not understanding a word of it, is a type of us all. EDUCO.

Wolfville, N. S., Aug. 10, 1887.

The highest mountain in the world is said to be Mt. Hercules, in New Guinea, soaring to an altitude of 32,786 feet.

TONIC SOL-FA NOTATION OF MUSIC.

Music should have a place in the school-room—in every school-room, in every home. Music makes the work of the school-room more cheerful, and has a soothing, restful and invigorating influence. Further, it is helpful to discipline. By its pleasant, rhythmic flow it secures order in the various necessary class movements. These in themselves should be sufficient to secure a place for it in the school-room.

But music has an educational power apart from and more important than this: of helping on the other work of the school. At this time I shall only speak of its aid towards physical culture and development. It is well to have a sound, cultivated, educated mind in a strong, healthy body. In large towns and cities intellectual education is cared for without sufficient opportunity for the proper development of the body. This partly accounts for the unfavorable comparison of city with country children, and also for much of the sickness attending or following work in high schools and colleges.

Correct breathing is an important factor towards securing good health. Vocal music, with the preparatory drill necessary for the production of good, pure musical sound, strengthens and increases the breathing capacity of the lungs. Voice training, and the physical exercise attending it, secure right position of the shoulders, broad chest, and deep, steady breathing, and so reduce to a minimum the evil effects of sitting so many hours at the desk. Further, the distinctly marked rhythm in music is conducive to the rhythmic action of the vital forces.

Dr. B. W. Richardson, a great authority on matters of health, says, "It is one of the points of life to get music into the home. If a doctor visits a sick child, and is told that it has been singing, he knows that an advance has been made in the health of that child. We associate the idea of singing with mirth, and with health, and wherever there is a family that cultivates music, and that is fond in the evening of passing the time away by the singing of delightful songs and hymns, that family is a happy and a good family. Let all the nation be a singing nation, and we have direct evidence of a happy nation."

If singing is to be taught in the schools as a branch of education we should use the simplest, the most natural, most intelligent methods and notation. The Tonic Sol-Fa methods and notation have been proved to have these points clearly in their favor.

Principal Chas. A. Hoyt, New Jersey, says, "I have secured better results with the Tonic Sol-Fa in three months than in three years with the staff system. My grammar department can now, after only three months of the Tonic Sol-Fa, sing any ordinary church music at sight. The results with even the smallest primary children (5 years old) are perfectly surprising."

Rev. E. P. Parker, North Carolina, says, "I regard Tonic Sol-Fa as the greatest musical invention. * * * It is emphatically the system, the notation—nature's method."

Miss A. Brooks, Kindergarten teacher, says, "I regard the introduction of the Tonic Sol-Fa system as one of the great movements of the century."

At the annual meeting of the Tonic Sol-Fa College, in Exeter Hall, London, in June, the chairman said: "In the School Board for London, in every single department of every school, the children are taught to sing by note. In every single one of these departments, save one, they are taught to sing according to the Sol-Fa method." The Secretary stated at that meeting that in the last six years the College had granted on an average 16,980 certificates, and last year 22,277.

Professor Cringan, Toronto, who has thirty-four schools, with about 14,000 pupils and 200 teachers under his care for musical instruction says, "In order to demonstrate the usefulness of the system, I will take a class of children who have studied from Sol-Fa not more than eight months, and have never had a lesson on the staff notation, and after an hour's transition from Sol-Fa to the established notation they will read at sight any tune containing modulation to related keys, or relative minor, written by any musician of known impartiality, such as Mr. A. E. Fisher or Mr. Torrington."

J. A.

Musquodoboit Harbor.

NEED OF A MINING SCHOOL.

The mineral wealth of Nova Scotia has long been known, but comparatively little has so far been done towards its development. Coal and gold have both, it is true, been mined to a considerable extent, but the yearly results, compared with the enormous extent of the coal and gold districts, are almost infinitesimal.

While the mineral deposits of other countries have been rapidly developed, and capitalists have always been eager to invest in what, when honestly managed, is one of the quickest means of securing wealth, our own business men have held aloof from mining; and, whenever they have had the opportunity, have done all in their power to prevent foreign capital coming into the country. Having no knowledge of mining and no faith in mines, they are giving truthful expression to their opinions in decrying the mineral wealth of the country, which only proves how densely ignorant they are in mining matters, and the necessity of spreading knowledge of the immense value of our mineral resources. The trouble heretofore has been that mining operations have been carried on by enthusiastic but incompetent men. They have had no practical knowledge of mining, and, as a consequence, have attempted to develop properties with entirely insufficient capital. As a result, many good mines have been partly opened up; but, as large profits were not realized, and as the working capital was entirely insufficient, have ultimately been abandoned and pronounced worthless. Individuals have lost heavily in these ill-planned ventures, and forever after have been loud in their condemnation of mining. These are the men who are continually decrying the mineral wealth of the country, and, influenced by kind-hearted motives, we have known of instances where they have taken the trouble to warn outsiders against investing in Nova Scotian mines, instancing their own losses as arguments against their value. Of late years a great improvement is noticeable. The management of mines has fallen into competent hands, and, backed by sufficient capital, the results have been surprisingly successful. The protective duties on iron have infused new life into that industry, and capitalists now see their way clear to realize large profits in working the iron mines, which lie in such convenient proximity to our coal fields. No country in the world offers greater facilities for the mining and manufacture of iron, and the large deposits of this mineral which now are unworked are destined before long to bring millions of money into the country, and to give profitable employment to thousands of smelters and miners. We have many good miners, mainly self taught, who are in demand in all parts of the world. If they had had the benefits of special instruction in the science and theory of mining, they might have risen to positions of eminence as mining engineers, but lack of scientific education has held them back. What is now needed is a mining school, where young men could receive scientific training. In no country is a mining school more wanted than in this. Would it not be well for the Government to move in the matter?—*Halifax Critic.*

In India from 1876 to 1886, the number of letters transmitted by the post office increased from 119,000,000 per annum to 238,000,000. Newspapers transmitted increased 115 per cent. This is a measure of the advance of education.

INDUSTRIAL TRAINING IN THE PAST.

In 1685 Thomas Budd, a native of England, residing in the colony of West Jersey, wrote and published "a small treatise," in which he gives his readers what he deems to be the proper system of education. It will be seen that manual training enters largely into his system. We quote from the *Popular Science Monthly* as much of the treatise as deals with the subject of education. He writes :

1. "Now it might be well if a law were made by the Government and General Assemblies of Pennsylvania and New Jersey that all persons inhabiting in the said Provinces do put their children seven years to the public schools, or longer, if the parents please."

2. "That schools be provided in all towns and cities, and persons of known honesty, skill and understanding be yearly chosen by the Governors and General Assembly to teach and instruct boys and girls in all the most useful arts and sciences that they in their youthful capacities may be capable to understand, as the learning to read and write true English, Latin, and other useful speeches and languages, and fair writing, arithmetic, and book-keeping; and the boys to be taught and instructed in some mystery or trade, as the making of mathematical instruments, joinery, turnery, the making of clocks and watches, weaving, shoemaking, or any other useful trade or mystery that the school is capable of teaching; and the girls to be taught and instructed in the spinning of flax and wool, and knitting of gloves and stockings, sewing, and making of all sorts of useful needle work, and the making of straw work—as hats, baskets, etc., or any other useful art or mystery that the school is capable of teaching."

3. "That the scholars be kept in the morning two hours at reading, writing, book-keeping, etc., and the other two hours at work in that art, mystery or trade that he or she *most delighteth in*; and then let them have two hours to dine and for recreation; and in the afternoon two hours at reading, writing, etc., and the other two hours at work at their several employments."

The chief features of Budd's system are very like those recognized of supreme importance to-day—that education should be made compulsory; that boys and girls should receive that instruction that will best prepare them for the duties of after life, not forgetting the culture of the mind; that the elective system should be adopted, at least in industrial education; that state provision should be made for education; and further, in sections not quoted above, he iterates the necessity of moral and religious training in schools, and that no distinction be made between the children of the rich and poor,

PERSONAL NOTES.

The death is announced from Stanstead, Quebec, of Rev. Dr. Kennedy, formerly Principal of the Ladies' Academy at Sackville.

John McMillan, M. D., of Pictou, has been appointed deputy examiner at the local matriculation of the medical faculty of McGill, to be held at Pictou.

Professor Henry Drummond, F. R. S. E., F. G. S., of Edinburgh, author of "Natural Law in the Spiritual World," is expected to visit the collegiate institutions of these Provinces during the present month.

Rev. Dr. Thring, of Uppingham School, England, whose stirring address to teachers delighted so many readers of the July number of the REVIEW, has been spending the summer in the Highlands, at Birnam Wood, so well known to the readers of Shakspeare's "Macbeth."

Chas. H. Fullerton, B. A., of King's College, has been appointed Junior Assistant Master of the Collegiate Academy, Windsor. The Rev. Dr. Willets will now be assisted by such a staff as will enable him to maintain that well earned prestige that belongs to his school. Mr. F. T. Richardson, Trinity College, Dublin, has been appointed Senior Assistant.

We understand Miss Burgoyne, one of the teachers in our public schools has had the offer of the position of teacher in one of the departments of the Presbyterian Ladies' College, Halifax, but the public will be pleased to learn that the offer has been declined.—*Windsor Tribune.*

SCHOOL AND COLLEGE.

St. Joseph's College, Memramcook, opened September 1st. The number of students enrolled is already 130, and it is expected that seventy or eighty will be added in the course of a few weeks.

Pictou Academy, N. S., has been selected as a station for the matriculation examination of the medical faculty of McGill University, for Nova Scotia. The examinations will be held on September 16th and 17th.

Lectures at the Dalhousie Law School were resumed September 7th, in the rooms of the Medical College. Three students from British Columbia were present. The new college building will not be ready for use till two or three weeks. A medical faculty has been formed for Dalhousie. Lectures will soon begin in the building of the old Halifax Medical College.

The new Ladies' College, Halifax, opens on September 15th. Miss Leach, educated at Wellesley College, has received the appointment of Principal. Professor Porter has the management of the Conservatory of Music, while Herr Klingenfeldt will be instructor of the violin.

The Sheffield grammar school building, Sunbury Co., N. B., was destroyed by fire on Monday morning 5th inst., the work of incendiaries. The Upper Sheffield school house was also set on fire, but the flames were got out before much damage was done. Sneak thieves are said to have set the fires.—*Courier.*

We have just received the calendar of instruction of King's College, Windsor, N. S. It offers a number of valuable scholarships and prizes. It confers degrees in Arts, Divinity, Law, and Engineering. The calendar contains 112 pages, giving full information on all the subjects and organizations in connection with the University. The Michaelmas term begins October 1st. Matriculation examinations October 4th.

Mt. Allison University is the first among our higher institutions of learning to begin the collegiate year. It opened on Thursday the 1st of September. The year promises to be one of increased prosperity and efficiency to the Sackville institutions. Prof. W. M. Tweedie, M. A., of London University, has been added to the staff of the University, and his scholarship and excellent training will lend an additional value to the facilities for acquiring a liberal education at Mt. Allison.

The move of separating the model schools of the town from the Provincial Normal School will be beneficial to both. The Normal School will have the benefit of some one hundred pupils from the town, that will be formed into two or more departments in the Normal School building for the benefit of its pupil teachers, and the model schools will be relieved to that extent, besides the town will have the sole control of its own public schools at the trifling additional cost of $500 per annum.—*Truro Sun.*

At Horton Landing, in the midst of the classic land of Evangeline, we recently had the pleasure of seeing Principal A. McNutt Patterson's Commercial and Agricultural school. The farm makes a magnificent display of fruits of all kinds. It gives no small agricultural and horticultural instruction merely to visit the school with its surroundings. We are not surprised that the Seminary of Acacia Villa draws students from over the whole Province. No person knows better what a boy is and how to make a good-natured *man* of him than Principal Patterson.

SCIENTIFIC NOTES.

The Acadian, Wolfville, N. S., has, in its issue of September 2nd, a graphic description of a trip to the lakes forming the head waters of the Gaspereau River. The scientific allusions, which are full of interest, point to the facile pen of a Professor of Acadia College.

The New Star, Kentville, N. S., is having some fun at the expense of the provincial newspapers, which are solemnly reporting the discovery of a fossilized Indian foot ("even to the seams of the moccasin"), found in the carboniferous district of Hants County. It also regrets that the great Cape Breton carboniferous "*alligator*" has been blown to fragments by the profane blasters, leaving not enough dust to identify it.

The Morning Herald, Halifax, N. S., had a telegram from Pictou, August 23rd, repeating a rumor that a person who was miserable for some months was seized with a fit of vomiting, and ejected a live lizard two or three inches in length. And the story went the rounds of the press. We are in a position to state that the dimensions of the animal from which this rumor sprang was, when stretched, about five-sixteenths of an inch in length—a shade over a quarter of an inch—and that instead of being a lizard, it was probably the larva of *Musca Cæsar* — the blue-bottle fly, or some allied species.

A correspondent in Queens County, N. B., writes to the **Review**, stating that bears do *not* emerge from their winter quarters in the lean condition alleged in our text books (see McAdam's "Chemistry of Common Things"), but that they are fat, although they become lean a short time after being out. He cites the opinions of various bear hunters in York and Queens counties in proof of his assertion, and says that the tame bears owned by Mr. Hagerty at McAdam Junction actually became heavier during hibernation. Mr. Hagerty, in corroborating this statement says, however, that the term of hibernation was short, nine weeks, and that the bears are young and growing. He states his intention of letting them hibernate the coming winter, under more favorable conditions than last, and afterwards may have something bearing upon the subject to communicate.

The school children are excited over the discovery of a colony of *Halictus*, a burrowing bee. They burrow in thousands in a sand bank, going to a depth of from eight to twelve inches. The larvæ are found singly at the ends of these burrows, where they appear to be fed with pollen wax. It is probably *Halictus parallelus*, Say, and is a rather rare find.

Kentville, N. S., Sept. 5th.

In some of the schools the children are writing a description of the spinning of a cocoon by a caterpillar in the school-room. A most practical way of teaching English composition, and gaining knowledge and mental power at the same time.

Windsor, N. S., Sept. 1st.

A correspondent says: "To-day, 6th September, is very warm. I weighed a pan of ice at 9 a. m. and found it to be 4 pounds 6 ounces. Weighed it at 6 p. m. when the ice was nearly all converted to water, and found it to be 4 pounds 8 ounces. The weighing was accurate, and nothing visible was added to the contents of the pan. Account for the increase of weight." We leave it for our students of physics.

LITERARY NOTES.

The Herald, Toronto, July, republishes a portion of Principal MacKay's paper before the Nova Scotia Educational Association, 1885. It says, "A translation into French appeared in *Buletin Mensuel*, for February. A Swedish translation has more recently appeared in *Nystavaren*, which is the organ of the Swedish S. R. A."

D. C. **Heath** & Co. have just published the following books, of especial interest to educators: Notes on the Early Training of Children. By Mrs. Frank Malleson. Third edition. A book for mothers and kindergartners. The English Language; its Grammar, History, and Literature. By Professor J. M. D. Meiklejohn, of the University of St. Andrews, Scotland. Meissner's German Grammar. Revised and rewritten by Professor Edward S. Joynes, of South Carolina College. Practical Lessons in the use of English. For Primary schools. By Mary F. Hyde, of the Normal school, Albany, N. Y. Industrial Instruction. By Robert Seidel. Translated by Margaret K. Smith, of the Oswego, N. Y., Normal school.

BOOKS AND EXCHANGES.

How to teach Natural Science: This is No. XI. of the "School-room Classics" series, published by C. W. Bardeen, Syracuse, New York, at 15 cents each. Wm. T. Harris, LL.D., formerly Superintendent of Public Schools, St. Louis, Mo., is the author. It is a plan of study designed for these very progressive American schools, and has received considerable attention from the leading educationists of America, being made the basis of the report of the committee on Physics Teaching, presented at the meeting of the National Educational Association, Chicago, 1887.

Kindergarten and Primary Drawing Course: We have just seen Parts I. and II. of this course, which is published by Selby & Co., 33 Scott street, Toronto. It has been authorized by the Minister of Education for Ontario. We wish our leading educationists would examine this course without delay. We believe that they would unanimously recommend it, or something of the kind, in our primary schools. The copies are ruled in squares, and designs are easily drawn in exact imitation of the originals. It thus cultivates the hand and the eye, and the simple designs are always more interesting than the monotonous stroke exercises by which children have generally been initiated into the mysteries of the art of writing.

The *Popular Science Monthly* for September has an article on Industrial Training two centuries ago, which shows that many important features of modern education were thought out in the past. .... In the September *Century* there is an able editorial on a great teacher (Mark Hopkins), which is full of suggestions that teachers may profitably read. Here is one grain of wisdom: "It is the fatal tendency in teaching to shrink towards the capacity of those taught—a tendency that able teachers resist by constant watchfulness and severe studies.".... *St. Nicholas* has for the past year been giving a series of sketches of great English schools, which are admirably illustrated and written. The September number contains an account of the famous Blue-coat school, whose boys were so strikingly portrayed by Charles Lamb. .... The *Swiss Cross* continues to improve with each issue. The last number contains so many articles valuable to the young scientist, and written in such a fascinating style that we could wish that every boy and girl in this country had access to its pages. With the healthy tone of such magazines as this and *St. Nicholas*, there is hope that the tide of trashy literature that poisons and enervates the minds of so many youths may be stemmed and turned back. ...... *Science*, published by Science Company, New York, comes weekly with always something fresh and new, stimulating its many readers into fresh channels of thought and inquiry. Two suggestive articles to educationists are found in the number for September 2nd—"Original Research in the American College," and "The Function and Conduct of Examinations." .... The *Journal of Pedagogy* is a new aspirant for the patronage of teachers. It is published at Athens, Ohio, and the initial number contains many admirable articles .... Three educational publications that have strong claims for teachers' support are, *The Teachers' Institute*, the *School Journal*, and *Treasure Trove*, all published by that great firm of educational publishers, E. L. Kellogg & Co., New York. They aim to give *practical* assistance to teachers, and they succeed.

BOOKS RECEIVED.

THE EARTH IN SPACE: A manual of astronomical geography. By Edward P. Jackson, A. M. Boston: D. C. Heath & Co., Publishers.

S. P. C. A. WORK.

INTEREST OF HER MAJESTY THE QUEEN.

The notable circumstances and the very distinguished honor that Her Majesty the Queen has just paid this noble society by her personal attendance at its sixty-third annual meeting, has called forth much comment from the English press, and the theme of most of it goes to show that the Sovereign does not attend meetings of other societies, and therefore her exceptional conduct in favor of this one must be regarded as indicating her deep interest and sympathy with the work.

Fifty-two years ago, as the Princess Victoria, she identified herself with its cause, and now while people from all parts of the civilized world are tendering their jubilee congratulations, this noble woman publicly before the world professes her membership, and thus shows her regard for God's dumb and dependent creatures.

The London *Daily News* thinks that by her visit to the Albert Hall immediately after the ceremony at the Imperial Institute, the Queen set the seal of royal approval upon the educational work carried on by the Ladies, Committee of the Royal S. P. C. A.; and goes on to state that between twenty and thirty thousand essays were sent in this year from the schools in all parts of London.

The *Daily Standard* in remarking upon the meeting says: "The Society for the Prevention of Cruelty to Animals has done enormous service, and its efforts have had no small share in the great transformation which has taken place in the national character with respect to the treatment of animals since it was founded."

The London *Daily Chronicle* also stated that nearly all the senior members of the royal family have at one time and another vouchsafed their personal support to the society. But it was reserved for the royal jubilee year for Her Majesty to come personally in contact with the Society and to give it such a gracious mark of her approval as to distribute the principal prizes to the student essayists of the Metropolitan schools. And not only so, but Her Majesty has since graciously presented her own photograph to each of the prize winners.

The following is Her Majesty's reply to the jubilee address presented by the Royal Society upon the occasion of its annual meeting. Its contents show that the most exalted position does not prevent Her Majesty from watching with the deepest interest even the treatment of inferior animals:

BUCKINGHAM PALACE,
June 19th, 1874.

My Dear Lord, —

The Queen has commanded me to address you as President of the Society for the Prevention of Cruelty to Animals, on the occasion of the assemblage in this country of the foreign delegates connected with similar associations, and of the interest in the success of the efforts which are being made here and abroad for the purpose of diminishing the cruelties practised on dumb animals. The Queen hears and reads with horror of the sufferings which the brute creation often undergo from the thoughtlessness of the ignorant, and she fears also sometimes from experiments in the pursuit of science. For the removal of the former the Queen trusts much to the progress of education; and in regard to the pursuit of science, she hopes that the entire advantage of those anæsthetic discoveries from which man has derived so much benefit himself, in alleviation of suffering, may be fully extended to the lower animals. Her Majesty rejoices that the society awakens the interest of the young by the presentation of prizes for essays connected with the subject, and hears with gratification that her son and daughter-in-law show their interest and sympathy by presenting those prizes at your meeting. Her Majesty desires me to announce a donation of one hundred guineas towards the funds of the society.

I am, my dear Lord, very faithfully yours,

T. M. Biddulph.

The Earl of Harrowby, K. G.

The Ladies' Committee in charge of the Educational Branch of the New Brunswick Society's work, have had most encouraging results since the organization of the Band of Mercy movement in this Province, and are now taking further means to extend the work, by issuing the following circular, which has been sent to all the superintendents of Sunday schools and to most of the teachers in the public schools throughout the Province.

CIRCULAR.

The Ladies' Humane Educational Auxiliary of the New Brunswick Society for the Prevention of Cruelty to Animals having, by the kindness of Lord Aberdare, President of the Royal Society, had a second copy of the diploma of the Royal Society placed at their disposal for presentation as a prize, have determined to dispose of it in the following manner, viz.:

The members of each Band of Mercy in connection with the N. B. S. P. C. A. are invited to write essays, consisting of the writer's "Personal Observations on the Habits and Treatment of Animals" for the year preceding the completion of his or her essay.

All essays written by the members of any Band are to be read and examined by a Committee appointed by the officers of the Band, and the essay judged by such Committee to be the best is to be sent to the Secretary of the Ladies' Auxiliary on or before the 15th day of May, 1888.

The Ladies' Auxiliary will then decide which of the essays so sent in is the best, and at the Annual Meeting of the Bands of Mercy in June, a book prize will be given to the writer of each essay sent up to the Ladies' Auxiliary; a more valuable book to the writer of the best essay; and the diploma will be presented to the Band of Mercy of which the writer of the best essay is a member, with the name of the writer inscribed thereon.

F. Murray,
President.

F. M. Smith,
Sec'y Ladies' Auxiliary S.P.C.A.,
Carleton Street, St. John.

Saint John, N. B., August 31st, 1887.

☞ The Committee wish to draw the thoughtful attention of the teachers in the public schools, and superintendents of Sunday Schools of all denominations, to the great importance of this Band of Mercy movement, not only as a pleasurable means of interesting the young in the protection of God's dependent creatures, but as a means of inculcating principles of kindness, and thus preventing crime in after life.

Write for reading matter and book of information—"How to form a Band"—sent free of charge on application to Secretary of Auxiliary. *Form a Band in your School so that the children may compete for the prizes named*, and for your reward depend upon it that these dumb and suffering servants of man (if they could speak) would bless you for doing so.

TEACHERS' INSTITUTES.

York County Institute will meet at Fredericton on the 29th and 30th inst.

The Albert County Teachers' Institute will be held at Riverside, N. B., October 6th and 7th. An interesting programme is provided. Prof. Burwash will deliver an address.

The St. John County Teachers' Institute will assemble in this city on the last Thursday of October. A full programme will be published in our next issue. It is expected that the meeting will be an interesting one.

The second meeting of the Sackville Teachers' Association was held at Mt. Allison College on the last Saturday in August. Discussions on several important subjects of school work, with practical illustrations thereon, took place. Mr. Goodwin presided in the absence of Mr. E. B. Phelan, Programme of the tenth annual meeting of Carleton County Teachers' Institute, to be held in Woodstock, September 22nd and 23rd, 1887:

First Session.—Thursday, 10 A. M. Enrolment of members; officers' reports; election of officers; appointment of standing committees; reception of visitors; discussion on developing ideas of pupils regarding the legislative functions of the Dominion, the Province, the County, the Parish and the School District.

Second Session.—Thursday, 2 P. M. Discussion on teaching arithmetic in primary and intermediate grades, opened by J. T. Horsman, A. B.; reports of work done Arbor Day; question box.

Third Session.—Friday, 9.30 A. M. Reports from Provincial and County Institutes received; classification of ungraded schools, opened by W. T. Kerr; difficulties in teaching spelling, opened by Louis Young; question box.

Fourth Session.—Friday, 2 P. M. How physics can be easily taught in common schools; lesson on color.

The Westmorland County Teachers' Institute will hold its next annual meeting at Moncton on the 15th and 16th September, 1887. The programme is as follows:—

First Session.—Thursday, 10 A. M. Enrolment of members, reports and election of officers.

Second Session.—Thursday, 2 P. M. Subjects:—"Practical Education," "Teachers' History."

Third Session.—Friday, 9 A.M. Subjects:—"What constitutes the Successful Teacher?" "Industrial Education."

Fourth Session.—Friday, 2 P. M. Subjects:—"The Teacher out of School;" "What and Why."

It is hoped that the teachers generally will bring specimens of work done by their schools in arithmetic, drawing, map-drawing, letter-writing and book-keeping. Teachers are also invited to add to the interest of the exhibit by contributing collections of natural objects.

Mr. S. C. Wilbur, Principal of the Moncton schools, has tendered the hospitalities of the town to the members of the Institute, and has kindly offered to make the necessary arrangements for their accommodation.

JOHN BRITTAIN,
Sec'y-Treasurer.

GEO. J. OULTON,
President.

The ninth annual meeting of the Charlotte County Teachers' Institute will be held at St. Stephen, on Thursday and Friday, the 29th and 30th Septemper, 1887. The following programme has been arranged by the Committee of Management:

First Session.—Thursday, 10 A. M. Routine; enrolment of members; election of officers, &c. Paper: Animal Life, Inspector Carter; followed by discussion.

Second Session.—Thursday, 2 P. M. Paper: Writing as required in the first six standards of graded schools, F. O. Sullivan; followed by discussion. Temperance as required in our Common Schools, Mr. John Lawson; discussion opened by Mr. Geo. M. Johnston.

Third Session.—Thursday, 7.30 P. M. Public Meeting: Addresses by Superintendent of Education, Rev. G. M. Campbell and Mr. George J. Clark.

Fourth Session.—Friday, 9 A. M. Papers: What should the Teacher read outside of ordinary School Work, with a view to General Culture, Mr. P. G. McFarlane; discussion opened by Mr. Wm. Brodie. Mental Aritmetic, Mr. James W. Campbell; followed by discussion.

Fifth Session.—Friday, 2 P. M. Paper: How to Teach History, Mr. James Vroom; discussion opened by Miss Addie Hanson. Determining time and place of next meeting, &c.

All persons interested in education are cordially invited to attend.

Certificates for free return fare by N. B. and G. S. Ry's, steamers *Flushing* and *Charles Houghton*, will be issued to those who enroll themselves as members of the Institute.

T. A. HARTT,
Sec'y-Treasurer.

F. O. SULLIVAN,
President.

[OFFICIAL.]

RUDDIMAN JOHNSTON & CO.'S MAPS.

The Board of Education has been pleased to prescribe for the use of schools, Ruddiman Johnston's map of the Dominion of Canada, and map of geographical terms—the former to be used at the option of trustees in place of the map published by the Canada Publishing Co., and the latter to be used in all rural schools, and in primary grades in cities and towns.

The map of the Dominion—2 ft. 8 in. by 1 ft 10 in.—is admirably adapted for the use of rural schools and younger classes in cities and towns. Its divisions are definitely and distinctly outlined, and the physical features of the country, such as rivers and mountains, etc., are boldly and clearly delineated.

The map of geographical terms will be found specially useful as an aid to correct conceptions of terms often misunderstood from want of illustration. It will also prove a useful ornament to most school-rooms.

The maps, mounted on rollers and varnished, are on sale at the several bookstores at $1.00 each.

WM. CROCKET,
Chief Sup't Education.

Education Office,
Fredericton, N. B., Sept. 1st, 1887.

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WINDSOR, N. S.

Michaelmas Term opens Oct. 1, 1887,
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The Calendar for 1887-88 ready Aug. 24.

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MICHAELMAS TERM, 1887.

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

PUBLISHED MONTHLY. ST. JOHN, N. B., OCTOBER, 1887. VOL. I. No. 5.

A. H. MacKAY, B. A., B. Sc.,
Editor for Nova Scotia.

PRINCIPAL ANDERSON,
Editor for P. E. Island.

G. U. HAY, Ph. B.,
Editor for New Brunswick.

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EDITORIAL NOTES.

WRITERS for the REVIEW must study brevity; otherwise we shall be compelled to reject valuable matter too often.

ARE you a subscriber to the REVIEW? We send a number of copies to teachers who are not yet on our list. Examine closely its contents and see if you can afford to be without it.

WE have to thank those gentlemen who, at the various County Institutes in New Brunswick spoke so cordially of the REVIEW, and otherwise helped to advance its interests.

YORK COUNTY TEACHERS' INSTITUTE put on record a resolution affirming the desirability of an Arbor Day for 1888. That is a move in the right direction.

ONE mail a short time ago, brought in the names of 33 new subscribers. This and other evidence show that the REVIEW is prospering.

WE have to thank Mr. H. B. Kilburn, of Fredericton, for a full and interesting report of the York County Institute. Unfortunately it arrived just as the paper was going to press, and we can only make use of a few references.

WE publish in another column the report of the committee appointed by the N. B. Educational Institute, to revise the grammar school course. Next month we shall publish the committee's report on the superior school course.

MR. VROOM, in his paper on "History," before the Charlotte County Institute, stated that "No history lesson was a success if the student did not gain from it clearer ideas of the general character of the age. Much that could not be brought out by an examination paper ought to be learned through history—lofty sentiments, admiration for a principle, attachment to a cause. The teacher should implant a sympathy for all that is right and good, and a prejudice in favor of home." When the subject is taught in this way we shall have better students of history, and —what is more important—better men and women.

YORK COUNTY INSTITUTE affirmed, "That this Institute wishes to put on record its appreciation of the value of the EDUCATIONAL REVIEW as an organ of the profession, and heartily recommends it to the support of the teachers of this county." Mr. Parkin spoke to the resolution, strongly recommending the REVIEW to every teacher. Mr. Day followed with a hearty approval of the REVIEW. He made special reference to an article written by Mr. Thring and published in the REVIEW a short time ago, which he considered worth a whole year's subscription itself. After further favorable comments upon the REVIEW by several of the teachers, the resolution was put and carried unanimously.

We give up considerable space in this issue to the Rev. Dr. Milligan's letter in reply to an article which appeared in our June number on the School System of Newfoundland. The latter has provoked considerable discussion in the Island, and Dr. Milligan's letter shows the other side of the question.

The University of New Brunswick opened this week. Thirty students presented themselves for matriculation, among whom are five young ladies who take a partial course. The number of students at the University the present year is a large one, and with the entrance upon a four years' course, there is every promise of increased prosperity for the University. The following are the winners of the county scholarships: York, Ernest Brydon Jack; St. John, W. H. Vanwart; Queens, Arthur L. Slipp; Kent, J. T. Hutchinson; Old Boys prizeman, David L. Mitchell.

The death of Hon. Senator McMaster, of Toronto, removed from active life one of the few men in this country whose energy, abilities, and ample means were devoted unsparingly to the advancement of education. McMaster University, Toronto, is a monument to his unselfish devotion and noble benefactions. His bequests to this institution have been princely. Besides erecting fine university buildings, endowing chairs, he leaves an endowment which, at five per cent., represents an annual income of $40,000. This, in addition to other gifts which he has made to education, is the noble example of a wise and generous philanthropist.

The *School Journal* (weekly), New York and Chicago, is a capital paper. Accidents occur in the best regulated households; but the following from a leader, Sept. 24th, is more like a Yankee conceit than an accident: "The time will come when the government of Great Britain, like the United States, will be a government of the people, by the people, and for the people; but it cannot be so long as the right to rule is transferred from father to son." The fact is that the government of Great Britain is more responsive to the representations of the people than that of the United States ever can be until its constitution is changed. The British and Canadian governments can be changed in a day if the people's representatives deem it necessary. The United States, under the same circumstances, would have to endure a dictatorship for four years or have a rebellion.

The Provincial Normal School of Nova Scotia at Truro will open about the time of our next issue. The advance made by this institution of late is remarkable. With a magnificent building, and a staff of instructors of more than provincial fame, built upon work which will ensure its permanency, and a growing demand for superior teachers on the part of our awakening school trustees, it could hardly be otherwise. What Nova Scotia wants more than any thing else, is the school-master who will disclose to the opening eyes of the future man the possibilities of his country and the possibilities within himself. A great deal of what is yet fashionable in our educational work will in the near future be looked upon as we now look upon what is called "the absurdities of Chinese civilization." Our normal schools, while paying all necessary deference to the hoary-headed pioneer principles of the past, are the natural guides to more economical and power-producing methods in the future.

METEORIC.

The meteor which passed over western Nova Scotia about 8.40 P.M., local time, 15th of September, is the most remarkable in the history of these provinces. Although it was so generally observed, we regret that so few accurate observations have been made. The *Morning Chronicle*, of Halifax, excelled all its contemporaries in taking in the situation. On the next morning it had from a number of distant points very complete telegraphic descriptions of the phenomenon. To-day, October 5th, after scanning nearly all our provincial papers, and waiting for private reports, which have only partially come in from several stations, we have but little more accurate observation to fall back upon. Many of the observations were necessarily inaccurate to a small degree, thus necessitating the averaging of as great a number as possible of those bearing evidence of the greatest precision.

The meteor, then, appears to have been a mass of matter over 1,000 yards in diameter, moving in an orbit around the sun, with a very great velocity, perhaps over 40 miles per second. If it could have been watched out in space a short time before collision with the atmosphere of the earth, it might have been seen moving from that portion of the sky near the head of Draco, which was high in the northwest at the time of its passage. Swifter and swifter it was falling, as if to cross the earth's track right in front of it. But the earth, with its ponderous steady swing, at the rate of nineteen miles per second, seemed determined to pass the line of the meteor nearly at right angles. The earth barely crossed this line ere the meteor struck the retreating rear of the earth's atmosphere over one hundred miles above eastern New Brunswick, descending towards the Atlantic in a line passing across western Nova Scotia. The meteor, hitherto colder than the iciest arctic mountain, chilled to its very heart, moved through the tenuous atmosphere with such a velocity that if it were moving in our lower air, and the law of pressure of wind storms held true, there would be three-quarters of a million pounds pressure on every square inch. It glanced off from against this terrible pressure about sixty miles above the coast-line of Shelburne County, on the Atlantic. But still there was such pressure exerted against the thin upper air by this terrible velocity that the air in front was liquefied and nearly instantly became hotter than white-hot liquid iron. The air in front was pressed in intensely writhing flame against the cold mass, just as the compressed flame in a huge cannon rolls in terrific force against its sides, or as if a continuous explosion of dynamite were playing on its surface. The surface of the mass melted, and no sooner melted than it was thrown off in flaming dust miles behind. It glowed like the seven-times heated furnace of Nebuchadnezzar, while the eighth part of an inch within the mass was probably cold enough to freeze mercury. The whirlwinds of white-hot air in front scooped out little pockets in the mass, just as the heated gas in large guns wear out pits in the surface of their bore, or as nitro-glycerine has been observed to abrade a metallic plate upon which it has been exploded. But as the meteor rolled in its course, this liquid flame struck its projecting angles with the force of cyclopean steam-hammers—with the force of batteries of cannons—and the splintered fragments fell to the ground. Imagination could not picture the terrific sounds, were such an event to take place in the denser air near the surface of the earth.

When the meteor struck the air, the resolved motion of the earth in its orbit directly *from* the course of the meteor was about thirteen miles per second at 8.40 P. M. This motion would contribute to the glancing tendency. The easterly component of this velocity would be about twelve miles per second, the diurnal easterly motion being scarcely worth noticing—one-fifth of a mile per second. The course of the meteor through space was nearer north-west to south-east. Its course over the earth was only a relative one, the earth's easterly motion making it approach the meridian more closely.

Its track over the province is found by noticing that on one side it passed to the east of the zenith, and on the other side of its track to the west.

That it was over the Atlantic in front of Shelburne when most brilliant, is shown in this way: From Bangor, in Maine, it was seen about south 50° east. Plot that line on the map. From Vanceboro and McAdam Junction it was seen about south 20° east. Plot that. From Bay of Fundy stations, nearly south. From Pictou, Halifax, Bridgewater, west of south.

That its minimum height was about sixty miles, appears from the following consideration: Professor Fernald, with his class, at Orono, near Bangor, was engaged in studying the sky. The altitude of the meteor was therefore very carefully estimated at about 20°. Bangor was 4° of longitude distant, which, roughly speaking, would make the angle of elevation of the meteor above Shelburne a little greater, say 22°. Now, Orono was fully 200 miles distant; multiply by the tangent of 22° and we get eighty miles of an altitude. Let us discount Fernald's altitude 5°, making it 17°. That will give us sixty miles. This altitude will agree with the described position of the meteor from other places where it was perhaps not so carefully estimated. But there is another witness. Sound, at its usual rate of travel in cool air, would come from the meteor to the earth in between four and five minutes, which is the time after its transit, when, according to several observers, the sounds commenced to be heard. Some report a shorter time. But then they admit that their time cannot be depended upon as accurate. The tendency in estimating it by after thought would be to diminish the time.

Its size may be inferred as follows: At Bangor and Orono, it appeared about the size of the moon. That is, it subtended an angle of about 31 minutes. But as it was near the horizon it might strike the observers as larger than it really was. Discount it 50 per cent. Suppose it appeared only half the diameter of the moon. Multiply the distance 200 miles and more by the sine of $15' 30'' = .0045$ and it will give over .9 of a mile. Bring to yards, $.9 \times 1760 = 1584$. Over 1,500 yards. According to Mr. Nickerson from the Shelburne coast, its smaller diameter subtended 47 minutes, which at 60 miles distance means over 1,300 yards. The greater diameter appeared to be one-third more, making it over 1,700 yards.

That the meteor glanced off from the atmosphere, appears from a number of positive observers who saw it vanish nearly 20° above the horizon. Its trail was seen foreshortened after it ceased to descend. If it maintained the same altitude above the Atlantic following its curvature, it would have been seen to go down to the horizon. As it did not go down, it must have glanced upwards and out of the air. Chill space on one side, and chill metal on the other side, would cause the skin-deep glow of incandescence to vanish in a second or two, once again in space. The meteor of Dec. 2nd, 1876, with apparently a slower velocity, passed over more than 1,300 miles, from Kansas to the coast of New York, without at the latter point coming nearer than 30 miles to the earth. Several showers of fragments, however, were thrown off in its flight. The course of the meteor of July 20th, 1860, from a point 90 miles above Michigan passed through the air with a velocity of only 10 to 12 miles, and when it passed the coast line of New York for the Atlantic, it was still 42 miles high. The evidently greater velocity of our meteor caused it to ricochet from the earth's atmosphere in a comparatively short course.

There have been a great number of accurate observations on meteors of late years in Europe and America, so that we are certain of many points formerly doubtful. We trust that the interest excited by our late celestial visitor, will cause our people to be better prepared to make accurate observations when the next comes.

TEACHERS IN COUNCIL.

During the past month many of the County Institutes in New Brunswick have held interesting, and, we hope, profitable sessions. From the reports that have been furnished us we are glad to notice the practical character of the work that has been done. At the Westmorland County Institute this was especially marked. The papers and addresses were practical, and the exhibition of school work of such a superior character as is fitted to give a great impetus to manual training in the schools throughout that county.

Among other interesting subjects at the Carleton and York Institutes, we notice that there were addresses on the importance of developing ideas among scholars in regard to civic government—teaching the functions of our municipal, provincial, and general governments. Inspector Oakes introduced the subject to the Carleton County Institute, and Mr. G. R. Parkin to the York Institute. The subject is an important one, and our readers will be interested in learning that a prominent barrister of New Brunswick has in course of preparation a treatise that may serve as a hand-book on civil government and its functions.

We expect to be able to present to our readers a synopsis of the addresses made before the York and Carleton Institutes, by the gentlemen who took part in the discussion on this subject.

The substance of a paper read by Mr. H. C. Creed, A. M., of the Normal School, will be found elsewhere.

The Charlotte County Institute met at St. Stephen last week. Papers were read by Inspector Carter, P. G. McFarlane, A. B., James G. Campbell, J. Vroom, and others. The papers and discussions seem to have been both interesting and profitable.

The Institutes of Albert and Gloucester are in session this week, and so is the Educational Association of P. E. Island, the programme of which is published in another column.

Northumberland County holds its Annual Institute on the 20th and 21st, and St. John on the week following.

Concerning the work of teachers and the sympathy and co-operation of parents, the Moncton *Times* of a recent issue makes the following pointed references:

"The school teachers of Westmorland have met and separated, and for another year the public will hear very little about them. But their work will go on, and will doubtless be the better because of the influence brought to bear upon them during these days in Moncton. * * Not when they meet together for deliberation, and have the strength of each other's sympathy, do they most need or most appreciate the kindness and sympathy, the courteous treatment and pleasing compliments of others. But it is when each teacher is engaged in his or her daily work, without the counsel and companionship of fellow teachers, that the kindness and sympathy of others is most appreciated and will do the most good.

"If it be true, as teachers are on festive occasions assured, that their work is grand and worthy of the best energies of the greatest intellects, then teachers have a right to expect that a due appreciation of that work, and a never-failing aid and sympathy will be accorded them. Else, they must have been wrongly assured in the first place, or there is a distinct neglect of duty on the part of those who gave the assurance. That is sufficiently clear. Whatever may be the shortcomings of individual teachers, however distasteful some of them may be to the people of a district, the fact remains that they are there, that their labor is with the impressible unformed minds of children, and that for good or ill the impress of their far reaching influence is being stamped upon those young lives. Prudence, therefore, and parental foresight would suggest the advisability of a deep and manifest interest in their labor and its results. It cannot be too strongly impressed upon the public mind that upon the general public rests a vast amount of responsibility in connection with the failure or success of school work, which is, ultimately, the success or failure of individuals and nations."

DALHOUSIE'S NEW BUILDING.

The Halifax daily papers recently contained full descriptions of the new building that has been erected for Dalhousie University. We have wished to reproduce a whole or part of these descriptions, but, unfortunately, our space is too limited. We can only point our readers to the cut of this magnificent building, found on our first page, and let them in imagination gaze upon it, approach it, enter that imposing door-way, and pace the halls soon to resound with the foot-steps of eager and ambitious youths, the hope of the years yet to come. Let them, if they will, put off their imaginary visit for a few days, and then enter the various schools, sheltered under one spacious roof, devoted to arts, science, law,—witness the admirable facilities for college work, listen for a moment to the teachings of the distinguished scholars who have been drawn to these halls by an enthusiasm for their work, a faith in the ultimate triumph of steady, upward effort, and by the encouragement of generous benefactors—let our readers do this, let them take a brief glance at the past, at what a few short years have accomplished, and they will be filled with hope for the future of this fine seat of learning.

We congratulate President Forrest on the many substantial tokens of the interest of the public in the institution, which he has been receiving. Dalhousie may yet do more for Halifax than any other of its institutions—make it famous.

EDUCATION AT THE ANTIPODES.

A most interesting and instructive letter on education in Victoria, from the pen of Dr. Cameron Lees, appeared in a recent issue of the *Scotsman* newspaper. As the information contained in it has been obtained upon the spot, and the Doctor himself is an accurate, and, upon the whole, an unprejudiced observer, the material he presents to the reader may be accepted as reliable and worthy of attention. But while there are facts and statistics which are gratifying to the educationist, there are statements and inferences which, as in every country where education is secular, cannot fail to be suggestive of grave reflections.

In Victoria education is given free to all, and *all* children in the colony *must* be educated up to a certain standard whether they be willing to accept state education or not. Consequently, the whole country is dotted with schools. Even on the most distant frontiers of the colony, in the deepest recesses of the bush, on the banks of the remotest streams, where neither church nor railway station has yet been built, there commodious and well-equipped schools are to be found. Wherever people have settled, schools have been erected.

Perhaps no country provides more liberally for education. Excellent buildings, abundance of teachers and assistants, and all necessary apparatus supply the conditions for the efficient accomplishment of the aims of the education department. But this is done at great expense to the colony. In 1885, the total cost per scholar, in average attendance at the state schools, was $24, and per head of the population nearly $3; the cost of public instruction, exclusive of the erection of school buildings, being nearly $2,500,000.

The state thus generously discharges its duty in affording opportunities of education to all. But it goes farther, it compels parents to avail themselves of their privileges. During the above mentioned year, the compulsory clause was so rigorously enforced that a sum of over $9,000 was inflicted as fines upon defaulters, with costs amounting to $1,800 more.

But education is not free throughout. The state defrays the whole expense of elementary education, but if the pupil desires to study advanced English, French, Latin, Greek, Mathematics, etc., he must pay a fee. Yet the state recognizes secondary education to some extent. There are grammar schools which we infer receive government aid, but in what measure Dr. Lees does not tell us. And assistance is given to deserving pupils in elementary schools in the form of scholarships, to encourage them to continue their studies into regions beyond that embraced in the elementary course. In addition to eleven exhibitions, of the annual value of $175, awarded for competition to pupils under fifteen years of age on the free programme, there are scholarships awarded annually to two hundred pupils of the state schools under eighteen years of age, of $50 each, on condition that the scholar attends at and obtains favorable reports from the authorities of one of the public grammar schools, or some other school, to be approved of by the Minister of Education.

The public school system is connected with the university by means of the matriculation examination at the University of Melbourne, when honors and exhibitions are competed for by candidates from the grammar and other schools of the colony. All who pass the examination, or even appear on the honors' list, do not necessarily attend the University. In fact a large number do not. But it is looked upon as affording the pupil on leaving the public schools, the best and last proof of the thoroughness with which he has prosecuted his studies while there. In India, we understand, the same system prevails, and it is almost useless for a young man to apply for a respectable situation unless he can present a certificate that he has passed the matriculation examination of one of the universities.

Another interesting and important, and we may say peculiar feature of state education in Victoria is the encouragement given to drill and rifle shooting. "There is a cadet corps which forms a part of the military system of the colony. Of this corps there are now eighty-five divisions, numbering upwards of 3,300 cadets. They are armed with Francotte rifles lent by the government, and ammunition is issued at half-price, the same as to the rifle clubs. Their uniform is simple and inexpensive, and is worn as the ordinary school dress. They are regularly inspected by military officers, and are divided into battalions. It was a curious sight to see in a country town a number of these young soldiers, with rifle in hand and satchel on their back, making their way to school on a day of inspection. 'There goes,' said an officer who was with me, as one of them rode past on his rough pony, 'the soldier of the future.'"

The education which is given in the state-supported schools is strictly secular. The name of God and Christ have been removed from the text-books in which they occurred. Even history has been withdrawn from the public school curriculum, because it was considered that opportunities might be offered during a history lesson, and taken advantage of by an enthusiastic partisan, to present such views of men and events as would be scarcely suitable in a mixed community. And assuredly it would be difficult, we may safely say impossible, to find a history worthy of the name that might not give offence to somebody.

The pre-eminently secular character of the education of the colony is strongly protested against by the clergy of all denominations. They freely and heartily condemn it, and declare that the youth of the country are being forced into absolute paganism. And yet Dr. Lees, who sympathizes with their attitude, tells us that little of anything has been done by them to meet the emergency. The clergyman is allowed the use of the school for half an hour before or half an hour after school-time for religious instruction if he desires it, but very few avail themselves of the arrangement. The Sunday-school, with its hour once a week, certainly cannot be regarded as equivalent to thorough and systematic instruction by a well qualified teacher. Some plan must be adopted by the various churches whereby the religious education of their youth can be overtaken, and the stigma of "godless" be removed from the education of the country.

But of this there can be little doubt, that it is most unjust to brand all schools as godless in which religion is not taught as a subject of instruction. Many who most frequently and most persistently use the term of reproach are those who, instead of the free, generous and noble teachings of the New Testament, would, in their religious instruction, substitute the narrowest, most intolerant, and most barren lessons in dogma. While there are many enlightened and self-sacrificing teachers, who, imbued with Christian principle, by the silent influences of their lives, their demeanor in school and out of it, their justice, temperance, and piety, lay the foundations of a lofty morality in the young people entrusted to them.

The apex of the educational system of Victoria is the University of Melbourne. Thither repair those who wish to prosecute their studies beyond the stage of the grammar schools, and for examination those who desire the university stamp put upon the education they have received in the state schools. The university is well equipped, has splendid buildings, able professors, laboratories, library, museums, all the conditions of successful work. In 1885, the government grant to the university was over $100,000, and the college fees amounted to nearly $60,000. In the same year there were 954 candidates for matriculation, 257 of whom were young ladies. All this indicates great educational activity in the colony. The state is generous in its support of its university, and private munificence has splendidly supplemented its expenditure. Colleges in affiliation with the University of Melbourne have been endowed and erected by the Presbyterians and Episcopalians on ground granted by the government, while the Wesleyans and Roman Catholics are doing the same.

One cannot but be amazed at such a state of advancement. The colony was only constituted in 1851, and the vast majority of the inhabitants belonged to a class which could not be called educated. Yet by their indomitable perseverance and intelligence they have greatly developed the resources of their country and become the possessors of much wealth; and prizing education as the true basis upon which to rest the security and advancement of their state, they have established a system under which no youth can enter upon the business of life without having received some mental training. Enterprise, public spirit, enthusiasm, self-reliance, and faith in their future, are qualities prominent in the Victorians, but they value education because it refines the nature without effeminating it; and they arm their children with that weapon which rarely fails, and without which they would assuredly be overcome in the battle of life.

FERNDALE SCHOOL.

No. V. An Apple Tree Borer.

(*Saperda Candida.* Fabr.)

T. Position *First*, and observe what I am showing you. This is a portion of the stem of a fine young, and at one time a promising, apple tree. Without any visible cause, this summer, it commenced to droop and then died. Here is the root and stump, with some sections sawn across. What do you see?

S. Why! there are holes going right through the heart of the stem of the tree.

T. You are right; but now look closely at this part of the stem, just above the root, about on a level with the surface of the ground around the stem.

S. It is mostly all eaten around under the bark and the vacancy is filled with a dirty kind of sawdust stuff.

T. Look closely to see if there is any opening in the bark which could admit an insect into these cavities.

S. No, there's none. Yes, here is a hole—a very small one—with a little of the sawdust stuff coming out. Is it there the insect got in? If so, it must be a very small one.

T. No, it is not so very small. Perhaps we can find it.

S. I don't see how anything big could get in. Nobody could tell there was anything wrong with the wood, the bark looks so sound; unless one was expecting to find something by looking very closely for it.

a

b

T. Yes, tap the bark over the cavities. It sounds hollow, does it not?

S. Yes, but you wouldn't notice that unless you expected something wrong.

T. Very good. But now look at these sections of the tree a little higher up. Large holes are bored towards the heart of the stem. The borers are probably in this upper piece yet, because you see the upper section is solid. I shall strike it so as to make whatever is in the holes fall out. What is coming?

S. Some of the sawdust stuff.

T. Keep watching, as we must soon shake something more out.

S. Oh! there is an ugly white maggot—a grub—come out.

T. Perhaps we may find more than one of them. You are quite right in calling it a grub, as it is the larva of a beetle, and is called by gardeners the *Round Headed Apple Tree Borer.* Let us examine it, and make a large drawing of it on the blackboard. See that our drawing will be a true one now. Here we have it at *(a).*

T. How large is it?

S. About an inch.

T. Its color?

S. White; but its head is brownish, hard and shining.

T. Its jaws?

S. Black and very hard. They move sideways like the caterpillar's jaws. But it has no feet like the caterpillars.

T. But here from another cavity we have got something else—more like a beetle asleep. What do you suppose it to be?

S. The beetle.

T. No. Let us draw it at *(b).* You see it is midway between a grub and a beetle. It is the pupa, or, as some call it, the chrysalis.

S. What is the beetle like?

T. Here it is pinned in our collection. Jack caught several of them last June one evening about some apple trees. Let us figure it at *(c).*

S. Who would have thought such a pretty beetle could have been so ugly once and have done so much mischief? How pretty the two broad white stripes look on its pale brown back. See how long and curved its antennæ are! Will you give us its life history?

c

T. I will. This pretty beetle's mother came out of the stem of an apple tree, or perhaps of a thorn bush, mountain ash, or some other tree nearly related to the apple tree, just three years ago this summer. Early in July, 1884, it deposited the egg which developed into this beetle in June, 1887. It selected the place with care, on the bark of the apple tree stem just above the ground. In a fortnight the egg was hatched and the young grub with its sharp jaws eat a small hole through the bark to the juicy wood upon which it fed. It grew larger and cleared a small space under the bark, larger than a cent, which was filled with its castings. These castings were pressed out of the small entrance hole and would have betrayed its presence if one should have examined the tree. The color and the sound made by the bark when tapped would also reveal the secret of its hiding-place it the cool days of autumn. In winter it becomes passive, reviving with renewed energy in the spring of 1885. This summer it extended its excavations and grew to over half an inch in length. After a second winter's sleep, it grew still more vigorous in 1886, boring this large hole up the centre of the stem, then out to the bark to prepare a way for its escape. But towards winter it filled up this point and enlarged its cavity in the interior of the stem, and became dormant, with its head directed towards its future place of exit. Then in the spring of 1887, it cast its skin and became a pupa. In two or three weeks the perfect beetle came out of its chrysalis case, with all its parts very soft. In a few days the wing cases and other parts of the beetle became hard, and it eat its way through the prepared opening in June, when Jack caught it for our collection.

S. It lives, then, for about three years in the living wood, does it?

T. It does. But now that you know its life history, what would you suggest to be done to preserve our apple trees from them?

S. I don't see that much can be done when they get into the middle of the tree.

ANOTHER S. We might scrape the bases of the trees and search for their borings in August and September. If they were scraped off before they got deep into the bark, that would put an end to them.

ANOTHER S. And if they were older you could find out their places by looking for their castings and scraping and tapping the bark. And if it should be hollow under the bark, I would open up their burrow and kill them with a sharp pointed knife, or a wire.

JACK. Couldn't something be put on the stems of the trees in June and July, when the beetle lays its eggs, that would keep them away.

T. Very good. I see that when you know the life history of an insect, you know about as well as anyone how to treat them. All your suggestions are good; and so is Jack's, especially, because if successful, the tree would not be injured at all. Mr. Saunders, superintendent of our Dominion experimental farms, recommends painting the tree stems with soft soap made as thick as paint by adding a strong solution of washing soda in water to it. A dry day will cause this to harden, and unless the season is very rainy it need be used only once in early June and once in early July.

S. Where did this beetle come from?

T. It is a native of America, first described by Thomas Say in 1824. In 1825, its first destructive effects were felt in the State of New York.

S. Does it do much harm in this country?

T. It has destroyed thousands of dollars' worth already in this country. But you now know how we can save all this loss, with but a little intelligence and labor.

S. Are there any other kinds of insects that bore apple trees?

T. There are one or two others common, but we shall talk about them some other time.

AMONG THE CONSTELLATIONS.

No. II.

> "In fourteen hundred and ninety-two
> There happened to be a great ado,
> For close without, before the town,
> The seventh of November's moon,
> A stone was fallen, and there it lay,
> With thunder and in open day!
> Two hundred and a half it weighed;
> Its color iron. Then they made
> Procession, and 'twas hither borne;
> But much by force from it was torn."
>
> —*Old Translation of Inscription on the Ensisheim Aerolite.*

Of the Ensisheim aerolite it could be truly said, "A stone was fallen and there it lay." Of the 15th September meteor of the Atlantic Provinces of Canada, notwithstanding all the positive assertions based on the evidence of "my very own eyes," the rhymster cannot say it. It has been seen to fall in Pugwash harbor, over the new Pictou railway bridge, in the woods of Maine, and in somebody's backyard in Halifax. It was observed to be of the size of a plate, of a pumpkin, of the end of a barrel, of an elephant, and of a box car. It ran to the east, to the west, to the south, and even to the north. But there was some excuse for this. The meteor was evidently never so flamboyantly flustered before. Its peep at the domicile of Adam's race, through the azure of a Nova Scotian sky, no doubt surprised it in its mad rush. We believe it is off never to return. What a lot of gaping, mildly intelligent, enraptured countenances it must have thrown its startled beams into in those few seconds! If there are a half dozen of these able to describe its position with reasonable accuracy, then we are not acquainted with them all. A leading daily next morning had telegrams from various points of the province, giving very fair, some very good, descriptions of the phenomenon. The rural papers repeated some of these instead of interviewing some person in their vicinity who had seen it. The results are that the single edition of that paper did as much to determine the elements of the problem as all the rest of the press from Cape North to Cape Cod.

Now, in hope that the readers of the REVIEW will be ready for the next meteor, remember that it is an object comparatively near the earth — within one hundred miles. If it fell vertically over St. John it would never be noticed there, especially were it as large as the meteor of the 15th. The arrival of a three mile belted volcano in a vertical hurricane would flatten out a larger superficies. At the same instant the Cape Cod fishermen would see a star fall in the north-eastern sky into the Atlantic. The English mail opposite Halifax harbor would see it in the western sky falling behind the citadel. Yarmouth would watch it falling across the north pole star; while Fredericton would see it in the south-east, and send out scouts to capture it in their celestial meadows. At any given instant a meteor must be seen by observers at different points in different parts of the heavens. If these different positions are carefully noted, the height and course of the meteor can be accurately determined from two or three of them.

Again, to some people the moon appears as large as a plate, to others as large as a cart-wheel. But everything depends on the imagined distance of the object. However, if the man who took the meteor to be of the size of a pumpkin, thought it also equal to the moon, and the man who took it to be the size of an elephant also saw it to be the size of the moon, then we would know that the object appeared to subtend an angle of about half a degree (31 minutes+) and that for every hundred feet it was distant, it was about one foot in diameter. In other words, we know exactly the angle subtended by the moon, and if a body in the heavens be compared in dimensions with the moon, we know the angle it subtends, and when we find its distance, we can easily determine its size. A very accurate way of estimating short distances in the heavens is by estimating the number of moon spaces, two moon breadths being a degree.

But another tendency to err in estimating celestial distances, is the apparent magnification of objects near the horizon, due to their unconscious comparison with juxtaposed objects, or to the suggestion of great distance from the observer. If a tyro were asked to point out with his finger an altitude of 45°, in the direction of a distant horizon, he would probably point little above 30° actually. Proof: look at the north pole star, which is about 45° high with us, and see if it does really commend itself to your judgment as being exactly midway between your zenith and the horizon. It looks more like an altitude of 60°.

Finally, we congratulate our readers who took the advice of our opening article, as it gave them the day and the hour of the advent of the September meteor. We admit the meteor was not in the programme. But it is always good to have the performance better than the promise. We are fully avenged on those who neglected our advice; with this prestige we come forward with more advice. Set to work at once to post yourselves in the constellations. There is no better way of describing accurately the course of any meteoric phenomena, than by naming the portions of the constellations through which they passed, or by the stars in their course. There are future opportunities coming, and those who take our advice will be gratified, and those who don't will be mortified, and it will serve them right. Keep your eyes open for the Leonid meteors of November 13th and 14th. The earth then plunges through a known orbit of meteoric bodies. After midnight they may be expected to be seen radiating from a point within the constellation Leo, whence their name.

We expect to illustrate these articles, occasionally, with small star maps or cuts of the constellations.

THE COMET.—Olber's comet, which visited our sky in 1815, has now returned, after seventy-two years' absence. It is telescopic; will be brightest about October 6th, and may be seen near Denebola in the constellation Leo.

THE MOON IN OCTOBER is in conjunction with *Uranus* on the 7th, Mars on the 13th, Mercury on the 14th, Jupiter on the 17th.

AURORA.—A beautiful display of the *aurora borealis* was observed between 8 and 9 P. M., on September 25th, in Nova Scotia. The "merry dancers" waltzed for a short time in most brilliant hues of nearly every color.

ALGOL, the "demon star" of the Arabs in Perseus, is now favorably situated for observation. In our next we may help our readers to find it, and give them times of its brightenings and wanings.

NOTES AND COMMENTS.

Newfoundland has a "Society of Arts" which enrols the names of the leading men of the island in its membership.

The *Evening Mercury*, Newfoundland, has had a valuable series of editorials on the fisheries of the island during the month of September.

The *Marine Industrial News* says that there is on exhibition at Peake's Island, Portland Harbor, a stuffed sea-serpent, captured on the banks of Newfoundland September 11, 1887, by Capt. Barnstead, of the schooner "Hattie F. Walker," Halifax. Its length was 47 ft. 3 in., and its weight 900 lbs. Its mouth contains a fine set of teeth, and on its upper jaw are two feelers, 13 inches long. Five feet back of his head are flukes on each side, and the end of his tail is formed like a sculling oar, being flat and nine inches in width at the end. This is news to us.

For the Review.]

WRITING IN THE SCHOOLS OF NEW BRUNSWICK, AND THE NEW COPYBOOKS.

That good work is done in the primary and intermediate schools of New Brunswick, is the judgment of all competent observers, whether residents in the province, or visitors from abroad. The methods of teaching generally followed are natural and reasonable. Due importance is attached to *method.* And the results are, in general, of a gratifying character.

This is not equally true, however, of all the subjects taught; and notably, I think, it is not true as regards writing. This opinion is based upon my observation in the Normal school during the last fourteen years. Taking the students who come from all parts of the province as specimens of pupils taught in the public schools, I am justified in asserting that only a small proportion of the pupils learn to produce writing fairly resembling the copies set them, or to write with their pens held in any proper manner, or to maintain a proper position while writing. Nine-tenths of the pupils, I should judge, habitually stoop over the desk when writing; and many of these bring the face within five inches of the desk. Probably not more than one pupil in ten holds the pen in such a way as to be able to make downward shaded strokes, as shown in the copy-books. Nearly all *draw* the pen instead of "driving" it with the point forward. Very many rest the hand wholly on its side, and thus cause the pen-handle to take the direction of the line of writing, whereas it ought to have the direction of the downward strokes. Very many pupils—chiefly girls in certain classes of schools—have a fashion of using blunt pens, drawing them as just described, and producing an angular, ungraceful, illegible, usually magnified style of penmanship, which is as different from any copies I ever saw as a duck is unlike a swan.

All or nearly all professional teachers of penmanship are substantially agreed as to the best manner of holding the pen. There are, I know, some reasons for thinking it easier to hold the hand with the back outward, than with the back upward. And when a convention of judicious teachers shall be disposed to favor a proposal to adapt our style of writing to that manner of holding the pen, I shall, perhaps, be ready to promote such a change. But for the present there is no call for a movement so radical.

To what extent the new series of writing-books will effect an improvement in the writing in our schools, time alone will tell. It is gratifying, meanwhile, to find the teachers on every hand expressing themselves as well pleased with the change. At the same time it is to be expected that some of the details will meet with adverse criticism.

As a guide to teachers, and in order to emphasize the importance of a proper manner of sitting and holding the pen, directions on these points were placed on the cover of the new copy-books. But unfortunately, through some mistake, the description of the writing position reads "Left side to the desk," where "Right side to the desk" was intended, and the cut on the front of the cover is not only incorrectly drawn, but in no way represents the position recommended.

About the time the books were issued, the publishers printed a small circular to be sent to teachers, the contents of which were as follows: The first part consisted of a few lines addressed to the teachers by the publishers over their own signature, calling attention to the peculiarities of the new course of penmanship, and the advisability of paying heed to the "hints and directions," etc. The second part, given over the signature of the writer, related to three topics: (1) Position in writing, briefly correcting the mistakes mentioned above; (2) Upward and downward strokes; (3) Movements. The following is the substance of what was said on the last two topics.

As a rule, the light lines are traced upwards and the shaded or heavy strokes downward. This should be observed in forming such letters as capital A, M and N. In O and similar forms there is an exception.

There are three different movements that may be employed in writing, all of which it is desirable for pupils to practise at times.

1. *The finger movement,* which is, perhaps, too exclusively used by many, as it lacks freedom.

2. *The fore-arm movement,* which consists in the movement of the fore-arm in any direction while supported on the muscular rest and finger rest, with no separate motion of the fingers. The fore-arm and finger movement are often combined. The former may advantageously be employed in forming capital letters, in "text-hand" and in the "continuous movement."

3. *The whole-arm movement,* in which no part of the arm touches the desk, but only the "finger rest." This movement should be practised occasionally in order to give freedom of action. It is adapted to large-sized lettering and ornamental flourishes.

This circular being deemed by the Chief Superintendent unsuitable to be sent out to the teachers, the whole parcel was destroyed by request of the publishers, and a new one was issued from the education office, which many of your readers have had the opportunity of reading.

In closing this communication, which has grown perhaps to an undue length, I desire to express regret that, in two or three books of the series, the ruling is not as it should be. In order to write some of the copies twice on the page, it will be necessary to rule an additional line (with pencil).

All errors noted in this edition will probably be corrected in another edition.

HERBERT C. CREED.

Fredericton.

For the REVIEW.]

SCHOOL SYSTEM OF NEWFOUNDLAND.

An article in the June number of the EDUCATIONAL REVIEW by "L. G. M." is ostensibly an exhibit of the Newfoundland school system, but I regret to say that it is little better than a caricature. Though written by a gentleman who says "that a residence of eight years in St. John's enables me to say that the results of the system are evil and evil continually," I hesitate not to state that the sweeping charges it contains, and the unqualified condemnation with which it abounds, are misleading and unfair, and are not only *unworthy* of the dispassionate utterance of the reverend and learned expositor, as I hope presently to make apparent to your readers, but smacks of prejudice much more than pertains to criticism, which should be honest, however rigid.

Of it, in a recent review, Rev. Moses Harvey, known favorably to many in the Maritime Provinces, writes: "We are unable to accept of Mr. Macneill's description as just or accurate. Many most important considerations are overlooked, and the whole facts of the case have not been presented with sufficient care."

In offering a few strictures, I charge Mr. Macneill with glaring omissions essential to fair interpretation, and with exaggerated assertions, that he has no evidence to establish. My contention with him is not whether in the abstract, under different conditions, a system after the model of New Brunswick, Nova Scotia, or Prince Edward Island, would not be better in Ontario and Quebec, etc., than the present separate system for Roman Catholics and Protestants,—or whether, under different circumstances, a dual separate system would not be an improvement upon a denominational one in Newfoundland, which, while "purely sectarian," recognizes practically Roman Catholic, Church of England, and Methodist schools, as there are but four or five public schools of the minor denominations. Mr. Macneill knows that 75,254 Roman Catholics out of a total population of 196,085, make separate schools inevitable. He may grow eloquent over "the Government that shall have the courage to pass a free unsectarian school act for the colony," but he knows right well that such an act is not in the region of practical politics. He knows, too, that the two denominations chiefly concerned in sub-division in 1876, have shown *no* wish to return to the separate school system, as it was previously, and are not likely to be influenced much by his extravagant deductions and unwarranted reflections. There might be perfect agreement between him and the writer in recommending one or the other of the above systems, if only practicable, and circumstances were favorable for its adoption; but this affords no justification for the charges of "L. G. M." which I hope now to make manifest.

Newfoundland, he says, has distinguished herself by the establishment of a "purely sectarian system," "wrought out on strictly denominational lines," the interpretation of which in his own words, is as follows: "The public schools, instead of being seminaries of patriotic and liberal sentiments, become sectarian centres, the children of one sect being *taught* from infancy to look with jealous and unfriendly eye upon those of another sect. The seeds of bigotry and narrowness of views are implanted at an early age, which the teachers of religion and patriotism find their efforts vain to uproot." The gist of this tirade is that public schools, instead of fostering love of country, nation and throne, teach principles on which not one of them can long exist. That this position is untenable is clear from the evidence herewith submitted. "No teacher in any academy or school, aided by moneys granted under this act, shall impart to any child attending the same, any religious instruction which may be objected to by the parent or guardian of such child." Such is the conscience clause of our Education Act, of which I have never heard of one violation in twelve years of my superintendency. Besides, I ask him to deny, if he can, that children (and very many of them) have been attending all the while, schools of other denominations than their own, and that every one of these supported by public funds is a "public school." Moreover, how can he reconcile with teaching "jealousy, bigotry, and strife," the employment of teachers of one denomination under boards of other denominations? Such possibilities as they now exist (and they have occurred again and again) prove that the alleged purposes, for which he asserts public schools are maintained, are not real, and that his testimony needs to be accredited. Finally, the use of the R. R. series of text-books, authorized here, and broad enough for New Brunswick, can scarcely be deemed un"patriotic" and illiberal in Newfoundland, while recent Jubilee services, in which both old and young united to celebrate their high regard for Queen and country, proclaim, despite of all defamers, that still this is "the ancient and loyal colony of Newfoundland."

"The system is most expensive, involving at least three times the cost of an equally efficient public free school system." The terms here are certainly studiously vague. I challenge him to name any free school system in the provinces *so* inexpensive. It certainly is not Nova Scotia, which, by the Report of the Chief Superintendent in 1886 cost $641,450.88 for 105,410 pupils, or a little over six dollars each; whereas Government expenditure, fees and contributions, towards property, have not averaged five dollars per pupil in Newfoundland. But certainly a dense population, as in the former, is in much more favorable circumstances for economical management than where the population is scattered along thousands of miles of coast line, in many cases without roads being possible, except at great expense.

Even in Prince Edward Island the total expenditure for education was $148,778.96, an average of $6.64 for each pupil enrolled. Nevertheless, in the face of these facts, "L. G. M.," expecting to enlighten your readers, asserts "the system is most expensive." Fancy is, however, made to serve for fact. "The three-fold superintendency, three-fold academy course and primary schools involve," he asserts, "at least three times the cost," etc. If meaning anything, these words assert that a free school system equally efficient is feasible for one-third the cost, or less than one dollar and sixty-six cents per scholar, which is a delusion. Again I ask, will one superintendent, one academy, and one-third of the teachers employed be equally effective as the present number employed? All acquainted with the facts know the cry of "most expensive"—"at least threefold the cost necessary"—is preposterous. The total number of schools, with all gradation possible beyond the present, could not be reduced, I say it advisedly, one-third of the whole, much less by two-thirds, owing to the physical difficulties in the way. Be it remembered that in by far the greatest number of settlements, there is never more than one school in operation, and that where there are two schools in the same harbor they are often far separate, and much more convenient to the scholars than could be any one where roads are poor. The total number of Methodist schools averaged an attendance of fifty-six scholars each: hence it is *not* true that there are three times more primary schools than there need be. It might be shown conclusively here, and in reference to the academy course as well as the primary one, that while some gain might follow in a few places from perfecting the gradation, which is now not interfered with in many of the populous centres, a little wholesome rivalry, without scattering firebrands of discord, proves a valuable incentive to both teachers and scholars—unquestionably also to Boards of Management.

But with "L. G. M." the threefold superintendency is a chief cause of the system being most expensive. Let us see. In New Brunswick the Chief Superintendent received a salary of $1,600.00; travelling expenses, $400.00; extra clerical service, $357.50; assistant got a salary of $1,200.00; clerk, $700.00; six inspectors, $7,200.00; travelling expenses, $40.40; total cost of superintendence of service in New Brunswick, $11,497.90, besides cost of stationery and office, not included, and of examining teachers, $680.92. Similarly, the management in Nova Scotia cost for officials, including inspectors, $15,225.00; besides office expenses, $1,368.63; and examination, $870.35. In Newfoundland, three superintendents received each $1,620.00 for salaries and all expenses, including their own office, which they have to provide; all travelling expenses, which in this colony are very heavy; stationery; postage outside of colony; leaving them for their entire work of superintendence, inspection, office, correspondence, examination of teachers—a work which is one of very great responsibility, so onerous as to admit of neither holidays nor office hours—and which with all that involves fatigue and much exposure in journeying by boat or on foot, as well as by steamer or carriage, the net salary of $1,200.00. It seems scarcely credible that in view of these facts, "L. G. M." should speak of the three *well* paid superintendents, and in such courteous terms (?) suggest "There are men to be found who try to defend the system as the best for Newfoundland; among these are *principally* the three *well paid* superintendents." Now, while at some loss to know what the learned reviewer here precisely means, as indeed in very much more of his remarkable paper, I doubt not that many of your readers will think with me that it was not "a little cool" for that reverend gentleman, who with light duties had received $2,000.00 a year, besides manse and perquisites, to insinuate that gentlemen not inferior to himself in social position, or possibly in educational or other respects, are overpaid or highly paid on the above salaries, or to flippantly speak of them either in the sense of being *overpaid* or as being ready advocates of a "most expensive" system—"evil and evil continually"—on the ground that they have an axe to grind.

"The system is most inefficient." This again is settled without proof by his "*ipse dixit*," albeit I think it doubtful if he ever spent an hour during session in half a dozen of the public schools of Newfoundland in the whole eight years of his residence. I claim for it that great progress has been made every year since 1876, in everything pertaining to educational advancement. Better school-houses have been erected, school furniture has been revolutionized, and school work has been rendered more attractive and effective by the introduction of maps, apparatus, and needful equipments, teachers have been trained and certificated according to standards of qualification, that the unbiassed cannot fail to respect and to encourage them in this. The legislature has made a liberal appropriation. They are not "cheap" uneducated men, but trained men and women receiving salaries comparatively respectable. Schools have not only multiplied, but attendance has marvellously increased and average greatly improved. In short, facts and figures undoubtedly prove that, when the previous condition of Newfoundland is taken into account, especially on the French shore (so called), and when difficulties to be overcome and means at command are borne in mind, the progress in the past decade has been marked and solid, and will compare favorably with what has been done elsewhere under more favorable conditions, and as a result in very many of the populous centres the public schools are quite as effective as in the provinces or England. Higher education is also showing signs of great hope. Our academies have prepared students for matriculation in Europe and America, and are prepared to do so regularly. To speak in the contemptuous way in which "L. G. M." points to our academies is characteristic of the whole paper. "An academy with a staff of half a dozen teachers or less publishes a syllabus of subjects taught that would eclipse a university with its staff of thirty professors." This grandiloquent sentence, if intended for the Methodist academy, I indignantly resent, and cannot forbear saying that any gentleman who can thus sneeringly refer to an institution having for its faculty a graduate of London University, another of Dublin, and a third of Mount Allison, besides a fourth who is a trained master from Westminster, and a fifth a mistress who is a matriculant of London, disparages himself, however exalted in his own judgment by his obvious prejudice.

I close with one observation more. "L. G. M." says, "The utter failure of the old, cumbrous, expensive system is evidenced by the fact brought out by the recent census, that in a population of less than 200,000, over 50,000 above ten years of age can neither read nor write." Here imagination must take the place of evidence again, as the enumerators give testimony *only* regarding *some* who can read and write, and without saying a word, *pro* or *con*, about a large doubtful class, of which they knew nothing, and had in many cases no means or power of testing, left him to perfect their statistics by making the above objection to the damage of the good name of Newfoundlanders.

GEO. S. MILLIGAN,
Supt. of Methodist Schools.

St. John's, Nfld.

For the REVIEW.]

THE S. P. C. A.

I am very glad to see the evident interest the editors of "THE EDUCATIONAL REVIEW" feel in the work of the "S. P. C. A." Some reference has been made to the institution in every successive number of THE REVIEW, but too much has not been said, although the limited space furnished by a twenty page quarto must necessarily be husbanded with great care. The REVIEW is the proper channel of intelligence concerning the great and good work of that noble organization; for it reaches all the teachers of the three provinces, and these teachers have, as no one else can have, the opportunity to instil into the minds and hearts of their pupils the sentiments of kindness and mercy towards the animal creation—the sentient beings over which God has placed the human race as guardians or friends. It would not be hard to show that the reflex influence of such efforts would be a great help in the government and work of the schools, but that must be reserved.

I was glad, too, to see how prominently our good Queen is brought to the notice of her loving subjects in this regard; showing that from the days of her early girlhood, she has been the constant and ardent friend of the society, and an ever ready and efficient aid in its benevolent and most meritorious operations. There is no truer sentiment than that of our great philosophical dramatic poet. "Mercy is twice blest; it blesseth him that gives, and him that takes;" among the beatitudes that fell from the lips of our Divine Lord, there was not a more gracious one than that embodied in the words—"Blessed are the merciful, for they shall obtain mercy." All our teachers should be induced to engage in this Divine work; and the REVIEW could in no way be more useful than in forwarding it.

EDUCO.

Wolfville, Sept. 16, 1887.

For the REVIEW.]

THE GILCHRIST SCHOLARSHIP.

A worthy young gentleman who recently left New Brunswick for the Mother Country, with the intention of studying at the London University, had a very hearty and complimentary send-off from his numerous friends. Commended for his diligence and good conduct, congratulated on his success, assured of the good wishes of many who seemed delighted to honor him, he no doubt experienced a happy complacency as he took his departure. This is all very well. He is a good fellow, has done well, and has been fortunate enough to gain that which secures to him at a trifling expense, a term of study at one or more of Britain's greatest seats of learning. No wonder the people of his acquaintance wish him well.

But he was banqueted and flattered; and his alma mater fairly beamed upon him with pride; and professors and alumni exclaimed, "See what our college can do!" It has become the fashion in New Brunswick to banquet the winner of the Gilchrist Scholarship. What does it all mean?

A graduate of a Canadian college, who, though perhaps not considered unusually brilliant among his school-mates, has by his diligence maintained a good position in his classes, spends a large part of a year in preparing himself for the entrance examination of an English university. Only a half dozen students in all Canada this year have thought it worth their while to enter for the same examination. Probably all of these are graduates. Our friend gets the highest marks among the six, and for this probably deserves praise. Only two or three of the English competitors in this same examination stand higher than he on the list. But these competitors are not college graduates. The examination is for *entrance upon* a collegiate or university course. Why, then, should grave professors, doctors of law, legislators on the floor of the House, even the highest officials in the land, be willing, or even eager to do homage to the fortunate winner of this scholarship? Is it not, in the eyes of the onlookers, "just a little flat?"

Will not somebody found a scholarship or bursary that will enable the winner to take a year or two of advanced work, as a post-graduate course, at Leipsic, or Edinburg, or Harvard, or Toronto, or whatever university he may prefer? To come out first in an examination equivalent to that on which the degree of B. A. is awarded in England, would, if the number of competitors were considerable, merit a measure of praise. But if this glorification over Gilchrist scholars is to continue, we need not weep for the predicted withdrawal of the benefit from Canadian students, though several of our young fellow-countrymen have received large advantages from it.

DOMINE.

THE VOLAPUK LANGUAGE.

Seven years ago, says the *San Francisco Call*, a Catholic priest named Schleyer, a linguist of some celebrity in Germany, gave to the world as a result of a lifetime of study, what he termed a universal language, and named it Volapuk language (pronounced Wol-a-peek).

Volapuk is defined world's speech, from *vol*, meaning world, and *puk*, speech. The language consists of the best of over twenty tongues, omitting their irregularities. The most is taken from the English language, the others being represented according to their importance. The pronunciation is arranged to be easy for all nations; the letter "R," therefore, is seldom used. If that letter is contained in English words when brought into Volapuk, it is changed to L. All the letters are English. The consonants are pronounced as in English, and the vowels like Spanish. Every word is spelt phonetically, there being no silent letters.

The rules of the Volapuk grammar have no exception. It even goes so far that plurals from the pronoun I (ob) are formed regularly by adding an s (obs), the same as with every noun. Adjectives and verbs can be formed from every noun by adding the syllables "ik" or "on." Certain syllables are used to save memorizing a large vocabulary; an instance is the syllable "le", which, when prefixed to any word, expresses the same general idea in a larger degree. House in Volapuk is "dom." The prefix gives the word "ledom," meaning palace. The syllable "lu" prefixed to a word denotes the same idea in a smaller sense, using the same example, "ludom" is cottage. These two syllables alone save memorizing of 100 words. Out of a classification of 900 words it is necessary to memorize but 302 syllables. Volapuk is so arranged that in translation all peculiarities are retained. To one unaccustomed to the sound of the language it seems strange, but its harmony grows upon the ear.

The whole grammar is contained in four small pages. Such grammars are printed yearly in twenty-five different languages.

When the language was first given to the world its advocates were mostly Germans. It subsequently came in great favor with the Dutch. Now in every large city throughout the world there are clubs, some very strong, devoted to the study of the language.

The thought of inventing a universal language was prompted by the difficulties experienced by German immigrants in America. The language is not designed to supersede any of the living ones, but to be a means of intercommunication between people having no common tongue.

Volapuk literature has assumed larger proportions, most of the classics in the principal ancient and modern languages having already been translated into it. A new dictionary of the language has just been issued in two books of 175 pages each. At present there are eight journals printed wholly or partly in the language, all of which are well supported by the adherents of Schleyer's novel tongue.

PERSONAL NOTES.

D. A. Murray, late "Munro Tutor," in Dalhousie College, has gone to the Johns Hopkins University, Baltimore.

W. S. Calkin, B. A., (Dalhousie), has gone to Cornell University, to take a four years' course in the science department.

Arthur Stanley MacKenzie, B. A., "Munro Tutor" in mathematics, we are glad to learn, has fully recovered from his illness.

Howard Murray, B. A., (London), "Munro Tutor" in classics in Dalhousie College, has returned to the province to assume charge of his duties.

J. W. Bailey, son of Dr. Bailey of the New Brunswick University, and Harris G. Fenety, son of Mayor Fenety of Fredericton, both graduates of the N. B. University, have gone to Harvard to take the law course.

Mr. W. F. Ganong, B. A., has recently received the appointment of assistant botanist to Prof. Goodale of Harvard. We extend our heartiest congratulations to Mr. Ganong on receiving this appointment, which was proffered without his seeking; and while welcoming him to the ranks of botanists, we hope that his "first love" in science will still claim his best attention.

Mr. A. W. Macrae, B. A. (Dalhousie) stood 36th on the honor list of matriculants to the London University in the June examination. Mr. Macrae holds the position of mathematical master in the St. John Grammar School, and we believe intends to stand the pass examinations with a view of ultimately taking a degree from the London University. We congratulate Mr. Macrae on the excellent record he has already made, being second of the Canadian matriculants, and predict for him further honors in the future.

SCHOOL AND COLLEGE.

We are glad to observe that the people of Truro are indefatigable in raising funds for a first-class *Kindergarten.*

The Halifax Medical College opens its course of regular lectures in primary subjects October 29th. The Registrar is Dr. A. W. H. Lindsay, M. A., etc., of Halifax.

We have received the "Catalogue" of Pictou Academy. Three hundred and fifteen students have been registered during the year, the majority of them from abroad.

The Victoria School of Art is going to be opened in October, we learn from advertisement. It has a superior staff of instructors, and is under a management which augurs success.

The New Presbyterian Ladies' College in Halifax opened last month under very auspicious circumstances. Over 100 pupils were enrolled. The faculty of instruction is a very strong one. This, no doubt, accounts for the large attendance at the first opening of the college.

We have received the annual circular, eighteenth year, of the Ontario Business College. We have been surprised to see so large an attendance from the Atlantic Provinces of Canada, and even from the West Indian Islands, enrolled on its register. There can be no better index of the thoroughness and extent of work done, and the influence of the institution in securing good positions for its graduates, than the list of students from all parts of Canada as well as from Ontario. Its principals and proprietors, W. B. Robinson and J. W. Johnson, F. C. A., have a good staff of instructors and several departments, including telegraphy, phonography, type-writing, etc., under their general management. The college is situated in Belleville, Ontario, corner Trout and Bridge Sts. Five thousand young men, representing eighteen different provinces and states, have passed through it since 1868.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classes and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

1. E. J. L. Kindly tell what the enclosed insects are. My hop vines, which a fortnight ago were green and flourishing are now black as if frost-killed, and literally swarming with these creatures, even the poles on which the vines are trained being covered.

The insect is *Aphis humuli,* Curtis, commonly called the "Hop Aphis," or "Hop-Fly." In Ontario it has been very destructive in some places to the hop farms. In England, Kirby and Spence say, "The hop grower is wholly at the mercy of these insects; they are the barometer that indicates the rise and fall of his wealth, as well as of a very important branch of the revenue, the difference in the amount of the duty on hops being often as much as £200,000, more or less, in proportion as the fly prevails or the contrary." The effect produced on the vines are exactly as above described from Cumberland County, N. S. *Treatment:* (1) Make a mixture of strong soap-suds; add to it salt and saltpetre till a brine is made about half as strong as ordinary beef pickle; add further a pound of copperas dissolved in warm water, to every five gallons of liquid; or (2) Make a strong decoction of tobacco by boiling at the rate of a pound of stems and refuse parts, or other cheap tobacco, to a gallon of water. Syringe the under sides, especially of the infected leaves, with this liquid.

2. Tell me something, also, of the maggot which eats into the apple.

This maggot is the larva of the "codling moth," *Carpocapsa pomonella,* (Linn). It has been very destructive to fruit in Nova Scotia. We have ordered a cut of it; and as the subject is worthy of it, we shall give it full attention at some future time.

3. A. F. How can we get caterpillars to spin cocoons and then come out the perfect insect, so that we may know which is which?

Take a chalk-box, cut the lid in two halves, crossways, and drive it home into its place; half fill the box with light sandy soil and set it on end filled up to the end of the half cover; cut a piece of ordinary window-glass equal to the other half of the lid and run it in to touch the lower half lid. You have now a good breeding cage. Put your caterpillars in, not too many. Feed them if they wish to eat. Some may descend into the earth to pupate, others may spin their cocoons above. Through the glass door you can observe their movements and trace their history. You should have several of these boxes, and write or draw descriptions of each kind of caterpillar you put in, with a note as to what you found it feeding upon.

4. E. F. M. What bright star is in the west in the evenings, below the line produced from the two last stars in the handle of the Dipper? It goes down now earlier than a few weeks ago.

The star is *Arcturus.* See Job ix. 9, and Job xxxviii. 32. It is of the first magnitude and is in the constellation *Bootes.*

5. E. M. Which city is now the capital of Louisiana, New Orleans or Baton Rouge?

Baton Rouge is now the capital. New Orleans was made the capital during the war, but Baton Rouge was reinstated as the seat of government some years since.

QUESTIONS TO BE ANSWERED NEXT MONTH.

1. "He reckoned without his host;" what is the derivation of this?

2. "The territories are under the direct supervision of the Federal Government (U. S.)." What is the government of the territories?

4. "'Provisional' County of Ontario;" what is that?

J. M.

BOOKS AND EXCHANGES.

Elementary Natural History.—An Introduction to the Study of Minerals, Plants and Animals, with special reference to those of New Brunswick. Prepared for the use of schools by L. W. Bailey, M. A., Ph. D., F. R. S. C., Professor of Natural History in the University of New Brunswick. St. John: J. & A. McMillan, 94 pp. This book, which is now being issued from the press, has been looked for with considerable interest, both on account of the increased attention to the study of our natural history and from the fact that no work whatever bearing upon this subject has been accessible to our teachers. At first view it may seem extraordinary that a book of less than 100 pages, with not more than three or four pages of illustrations, can be anything like an adequate text-book on the three kingdoms of nature. But on examining the work carefully, it will be seen that the author has kept in view one purpose — that of stimulating inquiry and guiding students in the pursuit of natural history. One sentence in the preface explains the plan of the work: "Mere descriptions are of very little value, unless the pupils have the opportunity of *seeing* the objects described; and even then, they should not be told what their characters and relations are, but by judicious guidance be led to deduce them for themselves." With this idea the author has prepared a work, which, in the hands of intelligent and practical teachers, is certain to be of the greatest importance to our common schools. The mineral and vegetable kingdoms have been treated more fully than the animal kingdom, nearly four-fifths of the books being given up to the two former. This is to be expected when we consider that these kingdoms furnish objects more accessible and convenient for study. The book furnishes proof—if any were needed—that school-books may be produced in the province, which for cheapness and mechanical execution cannot be excelled. The book is a pretty and compact little volume, neatly printed, well bound, and reflects the greatest credit on the publishers—Messrs. McMillan.

The History of England for beginners, which was reviewed in the August number of this paper, is for sale at Messrs. J. & A. McMillan's, St. John. We repeat what we have before said of this work—it is admirably suited for schools—the events narrated in a pleasant strain, and its excellent maps form an admirable feature of the work.

The Earth in Space: A manual of astronomical geography, by Edward P. Jackson, A. M., Instructor in Physical Science in the Boston Latin School. Boston: D. C. Heath & Co., Publishers. This is an excellent and delightful little compendium of astronomy and geography combined, and is well adapted by its admirable method of illustration to arouse and maintain an interest in a subject that is apt to be overlooked and at best imperfectly taught.

THE CANADIAN RECORD OF SCIENCE, Vol. II., No. 8, has just come to hand. It contains the following articles: "Distribution of American Plants," A. T. Drummond. "Invaporation," Prof. W. L. Goodwin. "Plague of Mice, N. S. and P. E. I.," Rev. Dr. Patterson. "The Rearing of Bears and the Worship of Yoshitsune by the Ainos of Japan." Prof. D. P. Penhallow. "On the Physiology of the Heart of the Snake," Prof. T. Wesley Mills. "The Freshwater Sponges of Newfoundland," (with cut), Principal A. H. MacKay. "Fossil Woods, Western Canada," Sir J. W. Dawson. "Squirrels," Prof. T. Wesley Mills.

The *Bookmart* for September, among other interesting articles, has an account of the ninety-five public libraries of New York....In the *Popular Science Monthly* for October, Prof. Joseph Le Conte, in an article "What is Evolution?" makes the somewhat startling statement that evolution constitutes one-half of all science. The method by which he seeks to prove the assertion, and the clearness with which he states the evolution theory, form an interesting contribution to this important subject....In *St. Nicholas* for October there is an illustrated description of the Netherlands and the Rhine, by Frank R. Stockton. It is so graphically told that it is almost as good as a trip to those famous lands....The *Century* magazine for October contains a striking portrait of Harriet Beecher Stowe. Mr. Stedman, author of "Victorian Poets," contributes a paper on recent English verse, in which many striking passages occur.... *Science* is publishing a series of maps that are especially valuable to teachers. The latest is one showing the trans-continental railways of America, with a description of each — route, country traversed, cost, etc. — a most valuable contribution to geographical literature...The *Illustrated London News* for October 1st contains a full page illustration of Miss Mary Anderson as Hermione in "A Winter's Tale," pictures of the New Chinese Naval Squadron, and an illustrated article on English Exploration in Egypt, besides other articles of interest and pictures of merit. Dealers now furnish this noted periodical for ten cents a copy, and at the office of publication, 237 Potter Building, New York, subscriptions are received at very favorable rates ...We have received Nos. 1 and 2 of the *County School Council*, a monthly publication devoted to the supervision and general interests of common schools. It is published at Chicago, and judging from the initial numbers it has a useful and prosperous career before it..... *The Swiss Cross* for October, has an excellent table of contents. It is an admirable publication for young persons interested in the study of science.

BOOKS RECEIVED.

From A. S. Barnes & Co., New York: Hale's Lights of Two Centuries. Price $1.75. The English Language; Its grammar, history and literature, by J. M. D. Meiklejohn, M.A. Boston, New York and Chicago; D. C. Heath & Co.

NEW BRUNSWICK NORMAL SCHOOL.

ENTRANCE EXAMINATION. SEPTEMBER, 1887.

ARITHMETIC. *Time, 1 hr. 30 min.*

(All essential operations to be exhibited. Eight questions taken as a full paper).

1. In round numbers, the population of New Brunswick is 320,000; the annual revenue, $600,000; the annual expenditure from the Provincial Treasury for Education, $154,000; the number of pupils attending school, 68,000. Find (*a*) the percentage of population at school, (*b*) the percentage of total revenue expended for education, and (*c*) the cost to the province of educating each pupil.

2. Find the least number that can be divided by any or all of the nine digits without leaving a remainder.

3. Make out a bill for the following articles, viz.—

13¾ yards of cloth at $1.50, 17 yards of flannel at 37½ cents per yard, 19 yards of linen at 18 cents, 10¾ yards of muslin at 30 cents, 35 yards print at 17 cents. Use any names and write a receipt for the amount of the bill, making a deduction of 7½ per cent. for cash.

4. Divide $21 among three boys in proportion to their ages, which are 11, 14 and 17.

5. A man owns 3–5 of a ship, he sells ¾ of a share for $27,000; what is the value of the ship?

6. Compare the following fractions, viz.:—$\frac{1}{3\frac{1}{2}}$, $\frac{\frac{2}{5}}{1\frac{1}{15}}$, $\frac{2}{9}$ of 2¼, .5625, and determine (*a*) the difference between the sum of the first two and last two, (*b*) the quotient of the 4th by the 2nd, and (*c*) the product of the 1st and 3rd.

7. A farmer is offered a mower at $75, payable in three annual payments of $25, without interest; *or* at $70 payable in three annual payments, the last two bearing interest at 7 per cent. Which is the better offer, and how much?

8. A room is 25 feet long and 22½ ft. wide; at one end is a platform 10 ft. long and 4½ ft. wide. What will it cost to carpet the room with yard wide carpet worth $1.20 per yard, the platform not being covered?

9. From 2 acres take 1 acre, 1 rood, 1 perch, 1 yard, 1 foot, 1 inch. (Arrange the work as in compound subtraction; no credit for working by reduction or by fractions).

10. If I pay $9.10 for a load of hay weighing 1,625 lbs., what ought I to pay at the same rate for 16¼ tons?

MENTAL ARITHMETIC. *Time, 12 min.*

N. B.—Answers to be written on this paper. Questions to be worked mentally and in silence.

1. 16½ yards at 16 cts. a yard?......................Ans.
2. Divide $32 between two persons, giving one $9 more than the other..........................Ans.
3. What part of $1 is 37½ cents?....................Ans.
4. In 2¾ bushels how many quarts?....................Ans.
5. In 4 rods how many inches?.......................Ans.
6. Interest of $64 for 4 yrs. 2 mos. at 6 per cent.?....Ans.
7. If ¾ of an acre cost $27, what cost 3–5 of an acre?.Ans.
8. 5½ lbs of beef at 6½ cents per lb?................Ans.
9. Find the sum of the odd numbers between 1 and 20....................................Ans.
10. 19 eggs at 15 cents a dozen.....................Ans.

N. B.—Any eight questions correctly answered taken as a full paper.

GEOGRAPHY. *Time*, 1 *hr.* 30 *min.*

(Any six questions, including the first, taken as a full paper).

1. Draw an outline map of New Brunswick, and locate on it the chief rivers, towns, lines of railway, coast waters, capes, islands, and the principal industries of the province.

2. Contrast New Brunswick and Nova Scotia in respect to (*a*) form, (*b*) area, (*c*) length of coast line, (*d*) number and length of navigable rivers, (*e*) physical features, (*f*) number and location of chief towns, (*g*) exports and imports.

3. Write geographical notes on the following rivers:—Hudson, Ottawa, Danube, Thames, Columbia.

4. Give a brief description of the river systems of North America.

5. Where and for what noted are the following places, viz.:—Amsterdam, Marseilles, Atlanta, Sherbrooke, Heidelberg, Florence, the Black Forest, Rimouski, The Tyrol, Winnipeg.

6. Write a brief account of lakes from the following heads, viz.:—(*a*) Origin, (*b*) classification, (*c*) uses to man Refer particularly to the lakes of New Brunswick.

7. Latitude and longitude.—(*a*) What they are, (*b*) how measured, (*c*) from what points and in what directions measured, (*d*) how to find from a map, (*e*) the connection between latitude, and animal and plant life, (*f*) between longitude and time. State the advantages of the 24 hour system of reckoning time.

HISTORY. *Time*, 1 *hr.* 30 *min.*

1. Write a summary of the chief events in Canadian History since confederation.

2. Give a brief description (*a*) of the early settlements in New Brunswick and Nova Scotia, (*b*) of the expulsion of the Acadians, and (*c*) of the struggle for responsible government in New Brunswick.

3. Name any events in the history of Canada or of New Brunswick which occurred during the reigns of Henry VII., Charles I., Oliver Cromwell, George III., and Victoria, respectively.

4. Write brief biographical notes, giving dates when you can, on any five of the following personages in English history, viz.:—Suetonius, Godwin, Earl of Kent, Simon de Montfort, Warwick the king-maker, Cardinal Wolsey, Earl of Essex, John Hampden, the Duke of Marlborough, William Pitt, Earl Beaconsfield; and of any five of the following personages in Canadian history, viz.:—The Cabots, Jacques Cartier, Sir William Alexander, Count Frontenac, Pontiac, Sir John Harvey, L. A. Wilmot, Joseph Howe, and Sir John A. Macdonald.

5. Describe the plan of operations in America during the War of 1812, and illustrate your answer by a rough sketch of the ground over which they extended, locating battle-fields.

6. Make a list of the sovereigns of the Stuart line, and describe briefly the reign of any one of them.

7. What is meant by "Reciprocity," "Imperial Federation," "Home Rule," "Commercial Union."

8. Explain the terms "Magna Charta," "Bill of Rights," "Act of Settlement," "Canada a Sovereign Colony," "Quebec Act," "British North America Act."

(N. B.—Any five questions, including the fourth, taken as a full paper.

(Concluded next month.)

GRAMMAR SCHOOL COURSE.

The following is the Report of the Committee appointed to revise the course of instruction for the grammar schools of New Brunswick.

STANDARD IX.

CLASSICS. *Latin.*—Finish Bryce's 1st Latin book. (Fables optional). Begin Cæsar, as contained in Bryce's 2nd Latin book. *Greek.*—Bryce's 1st Greek book, to the end of regular verbs.

MATHEMATICS. *Arithmetic.*—Up to and including discount, with special regard to the application of commercial rules Square and cube root. *Algebra.*—To end of chapter 21 (Todhunter), omitting fractions and chapter 20. *Geometry.*—1st book of Euclid (Hamblin Smith) completed. *Mensuration.*—Surfaces. *Book-keeping.*—Single entry (optional).

ENGLISH. *History.*—British history to the end of Tudor period—with special reference to the growth of social and political institutions. *Grecian and Roman History.* in alternate years with Grade X., as required for matriculation at the University, (Collier, or Liddell's smaller history if authorized, or Swinton's outlines). *Geography.*—General geography of the great divisions, and particular geography of the British Empire. Classical geography in connection with history.—*Grammar and Composition.*—Analysis and parsing—letter writing. Exercises in narrative and descriptive compositions.—*English Literature.*—Critical examination of literature taken from fifth and sixth readers.

FRENCH. (*Optional*).—First French reader and grammar.

SCIENCE. *Plant life.*—"How plants grow." *Animal life.*—Physiology and hygiene (or lessons in Natural history as alternative).

INDUSTRIAL DRAWING ?

WRITING ?

STANDARD X.

CLASSICS. *Latin.*—Finish selections from Cæsar (Bryce's 2nd Latin book), Æneid, book I., Latin prose composition—syntax and parsing—written translation from author used by class once a month. *Greek.*—Finish Bryce's 1st Greek book (dialogues optional). Begin Xenophon—syntax and parsing.

MATHEMATICS. *Arithmetic.*—Commercial arithmetic, continued, with special attention to stock, partnership and exchange. *Algebra*—Fractions and remaining chapters on simple equations. *Geometry.*—Euclid, 2nd and 3rd books (Hamblin Smith) (exercises on page 116–120 optional), completed. *Mensuration*—Surfaces completed; solids. *Book-keeping* (optional).—Double entry. *Natural Philosophy.*—Dynamics.

ENGLISH. *History.*—British history to present, with special reference as in Grade IX. *Roman and Greek History,* in alternate years with Standard IX., as required by the University matriculation examinations, (Collier. Smith's smaller or Swinton's outline).—*Geography.*—Review of general geography, particular geography of United States, physical geography, classical, in connection with history. *Grammar and Composition.*—Analysis and parsing, (continued). *Composition,* as in Standard IX. Lessons on growth and structure of English language. *English Literature.*—Study of one or more plays of Shakespeare, with sketch of author.

French. 2nd French reader and grammar.

Science. *Chemistry*, (optional). *Natural History.*

Industrial Drawing.

STANDARD XI.

Classics. *Latin.*—Cicero or such authors as required for University matriculation examination. (Ars Poetica, Horace's Odes, Book I., or equivalents (optional). Latin prose. Composition, syntax and parsing. Written translations from author, read by the class.

Greek. *Anabasis and Homer*, as required by the University matriculation examination. Greek prose. Composition, Syntax and parsing. Written translations from author read.

Mathematics.—*Arithmetic.*—Solution of any ordinary arithmetical process. *Algebra.*—To the end of Surd's. *Geometry.*—Book IV., with exercises of Hamblin Smith's text-book completed. *Trignometry.*—Plain triangles. *Land Surveying and Navigation*, (optional). *Natural Philosophy.*—Statics.

English. *History.*—Review of British history—general history (Swinton's). *Geography.*—Review of general geography—physical and mathematical geography, classical in connection with history. *Grammar and Composition.*—Carefully prepared monthly essays of some length, to be criticized and corrected by teacher. Lessons on growth and structure of English language (continued). *English Literature.*—Reading and criticized study of two or more plays of Shakespeare or optional use of other English classics, with sketch of literature of the Elizabethan period.

French. (optional). 3rd French reader or Pujol with grammar.

Science. *Chemistry, Natural History.*

Industrial Drawing.

This curriculum is based on the supposition that the required work is completed in the lower standards.

The committee would recommend that the Board of Education would allow this course to be so amended by the consent of the inspector as to suit the condition of schools unable to work out the course as above.

GEO. R. PARKIN, *Chairman.*
J. M. PALMER,
Committee. W. M. McLEAN,
J. G. A. BELYEA,
S. A. McLEOD.

OFFICIAL NOTICE.

English Literature for next June examination for license:

Class I. Reader VI. and Julius Cæsar (Shakespeare).
" II. Readers IV. and V.
" III. Reader IV.

Wm. Crocket,
Chief Supt. of Education.

Education Office, Fredericton, N. B.,
September 13, 1887.

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Professor of Language and History.

H. W. SMITH, B. Sc.,
Lecturer in Natural Science.

MISS OTTIE A. SMITH,
Instructor in Industrial Drawing and Calisthenics.

The Examination for admission to the Normal School will begin on Wednesday, the 2nd of November, at 9 a. m. Applications should be made at once to the Principal

THE EIGHTH ANNUAL MEETING
—OF THE—
TEACHERS'

PROVINCIAL ASSOCIATION

Will take place in the Hall of the Upper Prince Street School,

CHARLOTTETOWN,
—ON—
THURSDAY and FRIDAY, Oct. 6th and 7th.
The first Session opens at 10 A. M.

Papers will be read on the following subjects:

"The Work of the Primary Department," by - MRS. J. MCPHAIL.
"Writing," by - - MR. A. D. MCDONALD.
"School Hygiene," by - - DR. JOHNSON.
"Elementary Arithmetic," by - - - - - MR. CAIN, Inspector.
"The School and the World," by - - - MR. G. W. SUTHERLAND.

There will be a Public Meeting on Thursday evening.

GEO. E. ROBINSON,
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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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A. H. MacKAY, B. A., B. Sc., Editor for Nova Scotia.
PRINCIPAL ANDERSON, Editor for P. E. Island.
G. U. HAY, Ph. B., Editor for New Brunswick.

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EDITORIAL NOTES.

THURSDAY, Nov. 17th, has been set apart by the Dominion Government as a day of Thanksgiving, and will, therefore, be a school holiday.

SIR WM. DAWSON, who has given McGill University a world-wide fame, addressed a large convention of teachers the other day at Huntingdon, Quebec. Sir William was the pioneer reformer of Nova Scotian education. The hope has been expressed that these provinces may have the good fortune to enjoy his presence at one of our own conventions.

THE *Evening Mercury*, St. John's, Newfoundland, pays a very praiseworthy attention to the education of the Island. In that respect, it is ahead of many of our leading continental newspapers. It concludes a two-column article in one issue in these words: "The natural history of the Island should also be taught (in the public schools), and now that we have a museum of a creditable character, how interesting and instructive might visits of pupils to that institution be made if they were accompanied by a teacher; and what an impulse and pleasure thus given to the study of the geology, mineralogy, zoology, etc., of the land we live in!"

THE N. B. Natural History Society is about to open its rooms and museum to teachers and others in St. John and vicinity who may wish to take a course of elementary lectures in natural science, conducted somewhat after the methods of the Summer School. The lectures and use of the museum are free to all who join the Society. Further particulars, with the subjects and lectures, will be announced soon.

FOR variety of contents and usefulness we believe this number, which completes the first half year of the REVIEW, will compare favorably with any of its predecessors. The article on the constellations, which has been illustrated by Mr. Flewwelling, will, we hope, give fresh interest to the study of the stars, which at this season present such facilities for observation. These illustrations will be continued in future numbers of the REVIEW.

DURING the past month Teachers' Institutes have been held in Gloucester, Northumberland, Albert, and St. John. We have full reports of these meetings, but to do justice to them would take up more space than we can at present command. Besides, the local papers have given full reports of the proceedings. We should like to give, in future issues of the REVIEW, the substance of important papers, and emphasize material points brought out in the discussions at these Institutes. We have on hand, but are compelled to hold over till next issue, the substance of the addresses of Mr. Parkin at the York County Institute, and Inspector Oakes at the Carleton Institute on "Teaching the Principles of Civil Government." We have noticed other excellent papers which we are sure would be of general interest outside of the gatherings before which they were read. Contributors must bear in mind a former request—to be brief and *to the point*. Only in that way can we serve the interests of our patrons.

VOLAPUK—from *vola*, "of the world; *puk*, language—is a scientific international language. It is not intended to supersede any living language, but to be learned next the mother language by every educated person. It is formed on the general model of the Aryan families of languages, selecting from each the true and beautiful, while discarding irregularities, oddities and difficulties. Its material is largely taken from the English, but its structure—noun-declension, and verb-conjugation—is rather un-English as are two or three of its vowels. It is far easier to learn than any existing language, and has already made rapid progress in twenty or thirty European and Asiatic languages. It is to be tried by a small class in the Pictou Academy this winter. The grammar is expected to be fully mastered before the Christmas vacation. The text-book, is "Seret's Grammar with Vocabulary of Volapuk," 420 pages, published in Glasgow, by Thomas Murray & Son, and in London, by Whittaker & Co. At a Congress of Volapuk scholars in Munich this year, a Volapuk Academy has been formed. The next meeting of the congress is in Paris, 1889. After considering all, we believe that were English orthography corrected to agree with its orthoepy (and they should never have been allowed to drift asunder), the English language might, with greater advantage to all concerned, be adopted as the international or universal tongue.

OVER-PRESSURE IN SCHOOLS.

During the past few years the question of over-pressure has, perhaps, more than any other, been urged upon the attention of school-boards and educational administrators. Eminent physicians and educationists have discussed it in the journals of the day, while teachers, in their magazines and at conventions, have not been slow to express their views. Committees have been appointed to investigate the matter and suggest remedies, and have presented elaborate reports which have been listened to and read with satisfaction, and whose proposals to meet the evil have been commended as eminently wise and practical. And yet on every side we still hear the same cry of over-pressure, perhaps louder and more frequent than before. And why is this the case? Why is it that though so much has been uttered and written on the subject, so little has been done? Does the cry rest on a basis of fact, or is it a delusion? Are all these letters and speeches merely the spasmodic productions of nervous people and busy-bodies; or are they the genuine outcome of philanthropic zeal and an intelligent interest in the cause of education?

As we understand the question, there is much misapprehension of its import by many of those who have entered upon its discussion. The non-professional disputants, and, we fear, many of those engaged in teaching, fail to distinguish between the healthful pressure exerted by an enthusiastic teacher who is governed by a reasonable curriculum, and the pernicious urgency which generally accompanies a course of studies preposterous in its variety and extent. And therefore it happens that the best teachers deny the existence of over-pressure, while medical men denounce our educational fervor and declare that we are doing more harm than good. The former allege that the break down of many a promising pupil is attributable to other causes and not to excessive application to their lessons; but the latter see in school work the apparent cause of collapse: to that they unhesitatingly refer it and condemn it accordingly.

The position of the teacher in relation to the question is also complicated by the attitude assumed by the parents of his pupils. They are often unreasonably anxious for the advancement of their children from grade to grade, and that irrespective of mental capacity and physical strength. But if they expect them to be promoted they must first secure the necessary marks indicative of progress, and must accordingly perform a fair share of hard work. The character of the parent (so he imagines) is to some extent at stake in the pass or failure of his child: pressure is put upon the teacher and the teacher stimulates his pupil.

This interest, however, evinced by the parent in the progress of his children, is not unfrequently of great service to the teacher, by securing regularity of attendance and some attention to home preparation. And if the school programme be of possible dimensions the conditions are favorable to successful work. Nor need there be any fear lest dangerous results ensue from earnest and diligent application under the direction of a teacher who possesses prudence as well as zeal; a clear intelligence, as well as a sympathetic soul. We must affirm that under these circumstances we have never seen boy or girl injured by diligent study. But we have known of boys and girls being sent to school who ought rather to have been in the open air enjoying the sunshine and the breath of heaven: youths in whom the seeds of disease were already present, which only required the confinement and other conditions of the school-room for germination and growth. It unfortunately happens that sometimes delicate children display an abnormal brilliancy, and are encouraged to greater effort when they ought undoubtedly to moderate their application and spend most of their time in an atmosphere and in occupation favorable to health. A natural tendency disease, bad air, insufficient or improperly cooked food, want of cleanliness and restricted exercise are the fruitful causes of disease and death among children attending school, but excessive study, we may say, never. We have yet to learn that teachers meet with such a ready response to their demand for home preparation that they feel impelled from motives of humanity to advise their pupils to moderate their ardor. Boys have a remarkable faculty of taking care of themselves in this respect, and we think that it is likely to continue in vigorous exercise as long as there are boys. With girls it may be different. Their temperament is more nervous, they are not so strong and robust and not so capable of long continued exertion, and therefore, for them, a more limited curriculum should be prescribed. But we think that most teachers will agree with us when we say that though girls are perhaps more conscientious than boys, they are equally well endowed with the instinct of self-preservation.

We are convinced that the foolish and often frantic call for indiscriminate interference on behalf of pupils is for the most part groundless. The boys, and the girls too, must laugh at a great deal that is said about mitigating their deplorable condition. Many of the evils from which they are said to suffer they hear of for the first time from the perfervid utterances of humanitarian physicians and amateur philanthropists. They must wonder what it all means, but must have some faint notion that the school-boy millennium is at hand. Fortunately, however, if they are led to indulge in day-dreams of a time when there shall be no more lessons, no more themes, they are soon recalled to the realities of the present by the inspiring summons of their teacher to fresh and more vigorous and more strenuous effort. And the more intense their application to their studies the more satisfactory are the results, and the keener their enjoyment of times of relaxation when they occur.

We have had ample opportunity during many years to observe the effect of study upon most diligent students of both sexes, and can confidently aver that it is a most healthful occupation. In the course of a quarter of a century not one death has been recorded nor one instance of injury arising from an over-zealous prosecution of study.

But if the school curriculum be of such dimensions that its subjects, in number and range, are beyond the powers of the average pupil, and the time which the various subjects demand passes the limits of prudence, and curtails that which is required for amusement and exercise, it cannot be too strongly condemned. The chairman of the London (England) School Board, in his annual address, delivered a week or two ago, says: "The great danger which apparently threatens the steady progress of elementary education is the pressure which is constantly being exerted to render obligatory additional subjects of instruction, without reference to the varying circumstances of the children, or the settled conditions of elementary school life. We are in danger of destroying the efficiency of elementary education by attempting to teach a little of many things, instead of teaching what it is practicable to teach thoroughly and well." And this danger, of which Rev. Mr. Diggle warned his colleagues, is one which we fear threatens us too. The time-table is becoming so crowded with subjects that it is absolutely impossible to find time for them all. Distraction instead of interest ensues. The pupil in his home work does not aim at understanding his lessons but merely memorizes, while in school the time is so broken up into fragments that it is only possible to test his preparation, without securing his sympathy or calling into exercise his thinking powers. For the duty of the teacher is not confined to the communication of knowledge, but he must see that it is understood, and that the mind of the pupil is so disciplined that he will be able to acquire knowledge for himself. If the time-table does not admit of this, then it is bad and ought to be rectified. In the hurry and mental confusion arising from a multiplicity of subjects the pupil has no time to think, the intellectual atmosphere of such a school is not favorable to thought, there is cram throughout—drill if you wish to call it, but certainly it is not education. Hand-books or primers of all the sciences are in the hands of the pupils, and crammed, and often so unintelligently that they do not even understand the language employed. Worry and bewilderment are the result to diligent pupils, and often nervous collapse. If this is the evil complained of as over-pressure, there is not an intelligent teacher in the land but will heartily sympathize with the hostile criticism with which it is assailed, and cordially co-operate in any earnest attempt to banish it from our schools.

THE NEWFOUNDLAND SCHOOL SYSTEM.

The letter of "L. G. M.," in another column, will be read with interest. As the subject has been pretty thoroughly discussed, and both sides have had a fair hearing, we feel that the interests of our readers have been fully served by what has thus far appeared in these columns. We hope, therefore, that the letter which appears to-day will close the discussion, so far as this paper is concerned.

In inviting to our columns in June last an article on the present system of education in Newfoundland, we were actuated with one desire only—to obtain and lay before our readers for their information some account of the school system of that Province and its workings. Although the views of the gentleman who kindly acceded to our request were presented with considerable keenness and vigor, they were considered, on the whole, as a fair statement of the Island's educational affairs. From private information that we have since had from residents of St. John's, these views met with considerable favor. We are ready to admit, however, that our own view of the case is derived from an experience of the excellent results that proceed from the workings of the free, undenominational system that prevails in our midst. With the results of such a system before us—a system that confers the greatest good upon the greatest number, which secures the best results with the least expenditure, we may be pardoned for not seeing the advantages which the advocates of a separate system claim for it, and to again express the hope that Newfoundland may before long cast off the present cumbrous system and adopt a system which is best judged by its results.

THE N. S. NORMAL SCHOOL.

This institution was formally opened on Wednesday last. On that day 125 students presented themselves for admission to the various classes. But as three following days, Thursday, Friday and Monday, were allowed to students to present themselves, this number, it was expected, would be largely increased. The usual number in attendance during recent years has been from 150 to 200, and this year the number is not likely to be much less, notwithstanding the recent elevation of standards of admission to the several classes. It may not be generally known that attendance at the N. S. Normal School is entirely voluntary, and that its graduates have no legal advantages in the profession over those who obtain their license after private study or a course at other institutions. This fact speaks volumes, not only for the large number who annually present themselves to partake of the advantages of the special training which the institution affords, but also for the splendid equipment and the excellent faculty which prepare student teachers for their work. We congratulate the faculty and students of this institution for the fine prospect of usefulness before them on entering upon a new year; and the substantial advantages that must result to the whole Province from work which, to judge from the past, has been so conscientiously and intelligently performed, can scarcely be estimated.

There has been added to an already well equipped museum a fine collection of Nova Scotian birds mounted by Mr. Walter Bishop of Kentville.

THE WINTER TERM.

"While opinions may honestly differ as to the most expedient calendar for our school year, all must admit that so long as the seasons and the general pursuits of the people retain their present order and character, the time covered by the winter term is to the older classes of our youth—particularly to the older boys—the most valuable part of the year, as affording them their most advantageous period of study. Indeed, to many it is *either this or nothing.* How important then that the opportunity be afforded for gathering in the largest possible results from these winter months of study! How utterly inexcusable and shameful the conduct of trustees, who by inattention to such little matters as doors, and windows, and floors, and stoves, and fuel, do their best to cheat the youth of their section out of their educational birthright! Such cases may be rare, yet the Inspectors' Monthly Report shows that they do occur. But let us limit ourselves more precisely to the past and say that they *have occurred,* while we express the hope that they *will never occur again.* By all means, trustees, get your school premises in good order for a good winter's work."—*N. S. Journal of Education.*

The above will commend itself to every one who wishes to see the youth of the country get a fair common school education. The winter certainly is the golden season for improvement, and the neglect to provide instruction, especially for the larger children of a district during that season, is a great injustice to them. Carelessness and indifference on the part of school trustees in regard to keeping schools open during the winter season is not peculiar to one Province. It is, unfortunately, too common. There are several districts not far from St. John in which it is the intention, we hear, to close the schools for the coming winter. If this be done it will be a great injustice to the children in these districts, and we hope the trustees may fully consider the results of such carelessness and indifference on their part, especially as the rate-payers in the districts referred to are sufficiently numerous and influential to keep well equipped schools in operation all the year. The one remedy for such a state of things is compulsory education.

THE P. E. I. CONVENTION.

The eighth annual meeting of the Teachers' Provincial Institute, of Prince Edward Island, was held at Charlottetown on 6th and 7th October. The number of members enrolled, 174, was greater than on any previous occasion ; the attendance at all the sessions was large, and a more than ordinary degree of interest was manifested by the teachers in its proceedings. The papers which were read were upon the whole practical, and some of them bore evidence of careful preparation and much thought ; while the discussions which were evoked by the opinions advanced by the essayists were conducted with spirit, good sense, and intelligence.

The first paper was on arithmetic, by Mr. William Cain, Inspector for the eastern district of the Province, in which he advocated more thorough drill in the elementary rules, and more general practice in mental arithmetic. He manifestly secured the sympathy of his audience, and judging from the hearty commendations of his suggestions expressed on every side, he should not experience any difficulty in giving practical effect to them.

During the same session a very thoughtful essay on "The Primary Department" was read by Miss McPhail, Summerside. Miss McPhail's great success as a primary teacher was in itself a guarantee that her paper would not consist of vain theorizings, but proceed from the fulness of her experience, and won for her an amount of respectful attention rarely accorded to one who discourses on that department of professional work.

On the motion of the Chief Superintendent a resolution was unanimously adopted to appoint a committee to confer with similar committees from New Brunswick and Nova Scotia respecting the holding, next year, of an interprovincial Convention. The Chief Superintendent, Principal Anderson, Messrs. Seaman, McLeod and McSwain, were selected to serve on that committee.

It was also proposed, and heartily agreed to, "That this convention cordially recommend the EDUCATIONAL REVIEW, the organ of the teachers of the Lower Provinces, to the support of the members of the profession in this Province."

A lesson in English to a class of girls belonging to the Upper Prince Street school, by Mr. LePage of the Prince of Wales College, was a pleasant and interesting feature of the afternoon session, while the annual discussion on "Summer holidays, versus holidays Spring and Fall," and that on the proposal to dispense with the meeting of the Provincial Convention, next year, showed that both were subjects of great importance to teachers. The Institute again recorded its conviction of the necessity of a change in the holiday-time for country districts to mid-summer, and determined by a considerable majority to hold its annual meeting next year notwithstanding the assembling of teachers in Interprovincial Convention.

A public meeting was held in the evening in the Hall of the Upper Prince Street school, presided over by Mr. W. E. Dawson, chairman of the City School Board, and its signal success was in no small degree owing to the firmness and ability with which he discharged his duties. The programme comprised addresses, readings, and songs, and all were of more than ordinary merit. The speakers were Rev. Mr. Whitman, Hon. L. H. Davies, Superintendent Montgomery, Principal Anderson and Mr. Gallant. The reverend gentleman spoke with ability, eloquence and sympathy of the importance and nobility of the teacher's profession, whilst the others, by remarks instructive and entertaining, secured to the end the attention of the crowded audience. Mr. LePage read an excellent essay on culture, and the readings of Misses Lawson, Wade and Gunn were rendered with great feeling and power. The music was much appreciated—the songs by Miss Scott and Mr. Gallant, and the violin solo by Mr. Macdougall, particularly so; and too much praise cannot be accorded to Miss Barr and her assistants of the Upper Prince Street school, for the excellent class-singing of nearly 300 of her pupils, and the admirable order maintained by them throughout the evening.

On Friday a very useful paper on "Writing" was read by Mr. McDonald, New Glasgow, and elicited a spirited discussion, and as all the remarks and suggestions were of a practical character, and were offered by gentlemen who understood and were interested in the subject—Messrs. D. J. McLeod, Prince of Wales College, Inspector Arbuckle, Stewart, Georgetown, and Principal Anderson—the result ought to be very satisfactory.

A most valuable contribution to the transactions of the Institute was the article on "School Hygiene" by Dr. Richard Johnson, health officer of Charlottetown, and formerly a member of the School Board. It was not only well and forcibly written, characterized throughout by sobriety of judgment and clearness of exposition, but singularly free from professional narrowness and dogmatism. It was listened to with close attention and keen appreciation, and a hearty vote of thanks was returned to the Doctor for the pleasure and profit which all had enjoyed. His audience regretted that it could not be read in the hearing of every Board of School Trustees in the Province, but unanimously resolved to print it and a selection from the papers of the last three years, and circulate them as widely as possible.

Later in the afternoon Mr. Joseph Roach, Souris, in criticising the "Course of Studies," recommended the elimination from it of the advanced subjects, such as Latin and mathematics; while Mr. Henry Green, St. Peter's Boys' School, Charlottetown, in an essay upon "Education in English Board Schools," suggested the adoption of the English system in Prince Edward Island in preference to that which is operative under the present school law. Principal Anderson, the Chief Superintendent, and Mr. N. McLeod, Sum merside, maintained the supreme value of our system—that under it the poor as well as the rich, to an equal degree, and at little cost, enjoy the advantage of the best education that the Province affords.

Thereafter the officers for the ensuing year were chosen: President, Principal Anderson; Vice-presidents, Inspectors Arbuckle and Cain, and Mr. John McSwain; Secretary-Treasurer, Mr. D. J. McLeod; Corresponding Secretary, Miss Alice Fennessey; Executive Committee, Messrs. Ewen Stewart, Neil McLeod, Herbert Shaw, George E. Robinson, Charles Kielly, Domitian Gallant and Miss E. E. McKinnon.

After Mr. Seaman had vacated the chair, and his successor had assumed the duties of the presidency, and thanks had been tendered to Messrs. Seaman, Robinson, and their colleagues for their services, the following gentlemen were elected honorary members of the Teachers' Institute in recognition of their interest in the work of education: James McLeod, M. D., Richard Johnson, M. D., Rev. W. R. Frame, and Messrs. L. H. Davies, M. P., David Laird, P. C., T. Handrahan, W. G. Strong, J. G. Underhay, W. E. Dawson and Henry Lawson. Rev. W. R. Frame returned thanks in felicitous terms for the honor which had been conferred upon him.

In the evening the teachers of Charlottetown entertained their friends from the country with music—vocal and instrumental, recitations, refreshments, etc., and after singing Auld Lang Syne and God Save the Queen, the Convention of 1887 was closed, and all retired with the conviction that it was the pleasantest and most profitable of teachers' gatherings ever held in Charlottetown.

WHAT CONSTITUTES SUCCESSFUL TEACHING?

In a recent address upon this subject to the teachers of Westmorland County, Inspector Smith outlined the following points which are worthy the careful attention of every instructor.

(1) A teacher should have a good mental outfit. He should be well informed, and to his stock of information there should be daily additions from varied sources. He should especially read books and papers devoted to educational work. Better read too much than too little.

(2) Discipline in a school must be maintained at any cost. The teacher must be master in the school-room. Theoretically, the speaker was opposed to corporal punishment; practically, he did not express a positive opinion. But the teacher must control the school.

(3) The teacher must be persistent in exacting thorough work. A careless oversight on the part of the teacher does not tend to exactness on the part of the pupil. Vigilance should not be relaxed, nor what are termed small things be overlooked.

(4) All mathematical problems, however simple, solved by the pupils, should be explained by them, that the teacher may be assured the problems are thoroughly understood.

(5) The teacher should avoid telling the pupils too much when questioning them. They should be compelled to depend upon their own ingenuity and draw upon their own resources as much as possible. It is thus they receive benefit, and grow in mental power.

(6) In giving directions to his pupils with regard to work to be done, the teacher should not find it necessary to repeat. The pupils should be disciplined in the matter of giving quick and intelligent attention to every remark made to them by the teacher. So valuable time is saved and a good habit cultivated.

(7) Very long lessons should not be assigned. Better too short than too long. When very long, the preparation cannot be thorough. Parents are largely to blame for the fault of long lessons. Too many of them have the idea that getting through a book is equivalent to mastering its contents. But the teacher should go slow enough to do thorough work.

(8) In questioning pupils, the teacher should be patient. Give them time to comprehend the question in every instance. Put it in a different form only when assured that the first cannot be understood. The art of questioning is a somewhat difficult one to acquire, but is of very great importance. A question may suggest the answer, or it may be so obscure as to confuse the pupil. The former error is most common and should be especially guarded against.

(9) A teacher should not talk too much in the school-room. He should not talk much about discipline, and the children should do most of the talking about the lessons. He should also be very judicious in according praise or blame. Compliments should not become cheap, nor should censure be too harsh.

N. S. SUMMER SCIENCE SCHOOL.

The following has been suggested in continuation of the suggestions made in our September number, page 68, as requirements for first year certificates in the N. S. Summer School of Science:

CHEMISTRY—(300 marks).

(*a*) Examination in text of Chem. Primer; 100 marks.
(*b*) Demonstration by experiment of laws and properties as in Chem. Primer; 100 marks.
(*c*) Collection of home-made apparatus for teaching Chemistry as in Primer; 100 marks.

PHYSICS—(300 marks).

(*a*) Examination in Gage's Physics, chap. i., ii. and iii.; 100 marks.
(*b*) Demonstration; by experiments in the same; 100 marks.
(*c*) Collection of home-made apparatus for teaching same work; 100 marks.

These suggestions have not yet come before the committee for consideration, but they indicate the probable complexion of the work. There may be some modification in the staff of instruction before the programme of next year's work is announced.

FERNDALE SCHOOL.

No. VI. Papilio Turnus. *Linn, etc.*

T. You know this butterfly?

S. Yes; it is the "swallow-tail." They were very common last summer in June and July. It has knobbed antennæ; therefore it is a true butterfly.

T. Very good. It is sometimes called the "*turnus* swallow-tail," to distinguish it from other swallow-tailed butterflies which are not so common here. In fact it is *the* butterfly, as it receives the Latin name *papilio,* which meant "butterfly" with the old Romans. Do you know any word derived from *papilio?*

Jack. Yes; you said the pea blossom was sometimes called a *papilionaceous* flower because it looked like a butterfly—*papilio.*

Another S. I saw a fellow who pinned one on his hat last spring, when he was out in the woods, and it was still moving its wings when he came home in the evening.

Papilio Turnus. *Linn.*

T. Was he collecting butterflies?

S. No; only for fun.

T. Would you stick a pin through the body of a living butterfly?

S. No, because it would be cruel. You told us always to kill the insect first in the most painless way. It would be very cruel to allow a living insect to struggle on a pin.

T. How do you kill them?

S. I just put a drop of chloroform or gasoline from a little phial on their bodies, and they become instantly quiet and dead.

T. What would you do if you caught a specimen and had not your phial with you?

Jack. I would quickly and firmly squeeze the thorax or breast of the insect, beneath its wings, which instantly kills it. I could then pin it, and spread out its wings to dry the way I wanted.

T. You are right. No true naturalist can cause unnecessary pain, even to an insect or a reptile, although we have good reason to believe that they are not so sensitive to pain as the higher animals.

S. But it is necessary to kill some insects and animals, or else they might be the cause of the death of men and women from starvation. They would eat up and destroy the crops which we grow.

T. True. You can tell me then, I suppose, what you think is the use of having lessons in school on insects. I just want to know what you think of it.

S. Because we are gaining knowledge. That is what you say we study history for.

Another S. I think it is more useful than history. What is the use of knowing about Henry VIII. or Julius Cæsar? I would have liked them better if I never knew anything about them.

Another. And you'll never meet Henry VIII. or Julius Cæsar either; but you will meet insects every day.

T. I see you are all naturalists. You can understand insects now very well. But when you grow a little older you will also see that we can obtain some good from knowing the character of men who have lived, and the effects of their character on the world. But for young people I think you are right in trying to know what you can understand. And then, again, as some of you suggested, the subject is a very practical one.

S. Yes; because if people knew all about insects they would know how to try to stop their mischief. I wonder how much mischief is done by them?

T. That is just what I was wanting you to come to. The United States has now a very able entomologist, with a number of salaried assistants, whose business is to study the insects of the country, and report to the government, which publishes the information for the use of their people. And in addition to this, many of the several States have entomologists of their own. A great deal more than $100,000 is spent in this work alone.

S. And does it pay?

T. Yes. For it was estimated when this work was begun that $200,000,000 (two hundred million dollars) worth of produce was destroyed each year in the United States by insects; and of this from $50,000,000 to $100,000,000 should be saved, it was estimated, by a popular knowledge of insects and the best manner of treating them. How many $100,000 are in $100,000,000?

S. 1,000.

T. That is, they expect a dollar's worth of knowledge to save one thousand dollars' worth of produce?

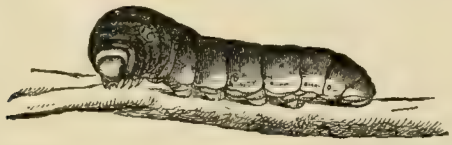
S. Have they a government entomologist in England?

T. They have.

S. In Canada?

T. They have, and an excellent naturalist, James Fletcher. He estimates the loss in Canada as equal to one-fifth all the crops produced. Just think of all the apples, and plums, potatoes, wheat, oats and other articles raised each year in Nova Scotia, New Brunswick, and Prince Edward Island—one-fifth of the whole destroyed by insects of one kind or another. This one-fifth, if saved, would be clear gain to our producers. Sometimes, of course, it is one crop, and sometimes another that is chiefly attacked. You can see now that a knowledge of insects is of much more importance in our country school sections than many other things taught. And this is one reason, I suppose, why the annual school meeting in Ferndale has been so generous to your teacher this fall.

But our time is nearly up, and we must return to our butterfly. Here is the full grown larva:



How long?

S. Nearly two inches long.

T. Its head is—

S. Reddish brown, with a yellow fold right over its head.

T. Body—

S. Dark green in front, and paler on the sides.

T. On each side of the third segment is—

S. A kind of an eye spot, nearly oval; yellow, circled with black, and centred with a blue dash, edged with black.

T. In the fourth segment there is—

S. A raised yellow fold, edged with black, and one something like it on the last segment.

T. On the fifth segment?

S. There are two blue dots—one on each side.

T. This caterpillar was hatched from small eggs about the twentieth part of an inch in diameter. They were placed singly on the leaves of the trees on which the larva feeds. It is now ready to pass into the chrysalis state. It will bind its lower part by fine silk threads to the under side of some support, and then spin a delicate silken band or loop, tying its upper portion to the support. Its dull, brown chrysalis case thus tied up is an interesting object. On what have you observed the caterpillar to feed?

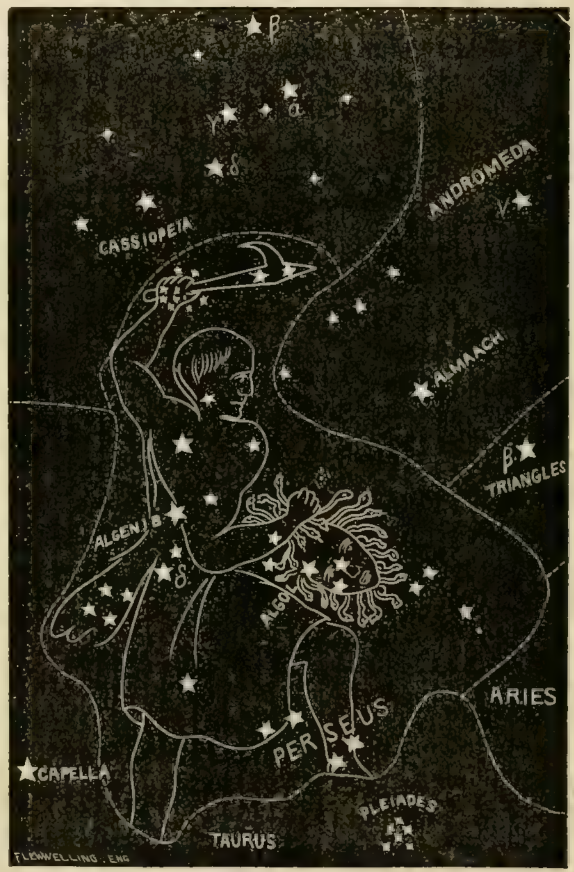
S. On apple trees, cherry trees, thorn hedge leaves and some other plants.

T. Very good. In next lesson I will probably give you an outline of the classification of insects, with figures illustrating the orders.

AMONG THE CONSTELLATIONS.

No. III.—Perseus and the Demon Star.

> "Perseus next
> Brandishes high in heaven his sword of flame,
> And holds triumphant the dire Gorgon's head,
> Flashing with fiery snakes! The stars he counts
> Are *sixty-seven;* and two of these he boasts
> Nobly refulgent in the *second* rank—
> One in his vest, one in Medusa's head."



This is the constellation Perseus. The mythical hero is represented as having one foot in the stars, directed towards the Pleiades in *Taurus* the Bull, and the other nearly towards Capella in *Auriga* the charioteer. *Delta* is on his body, *Alpha* (Algenib) on his breast, *Gamma* on his right shoulder, whose uplifted arm bears a sword with a magnificent telescopic star cluster on its hilt, and two smaller stars on its blade. The left hand holds, in the cluster around Algol, the dripping head of Medusa, one of the three terrible Gorgons, for the slaying of which the gratitude of mankind placed him eternally in the heavens and in the most splendid portion of the galaxy. Algenib and Algol, with Almaach in Andromeda, are second magnitude stars; *Gamma* and *Delta*, third magnitude. Capella is in the neighboring constellation of Auriga, the charioteer, and is of the first magnitude.

Now don't let Algol, the winking eye of the dread Medusa, change us into stone—stoney indifference. On the contrary, far otherwise. How shall we find "Al Gol," *the demon* of the Arabians? Out, let us go, the first clear November night. When the Pleiades rise nearly half way up the eastern sky, draw a line from them, parallel to the horizon, northward, just across the milky-way to Capella. Right above this line, with his body in the milky-way, is Perseus. Higher over his head, in the milky-way, is the W shaped constellation of *Cassiopeia*. Nine degrees E. by N. from Algol is the bright star Algenib, which, with Almaach, twelve degrees west or towards the zenith, makes a perfect right angle at Algol, with the open part towards Cassiopeia. By means of this strikingly perfect figure the three stars last mentioned may always be recognized, without the possibility of mistaking them. Our cut will now give all the directions necessary to find Algol which, for all except nine hours out of every two days, twenty hours and about forty-nine minutes, shines as a brilliant star of the *second* magnitude. During these nine hours, it grows dimmer for four hours and a quarter, until it is only of the *fourth* magnitude. After fifteen minutes of this obscurity it commences to brighten, and in a little over four hours it is normal again. Before we enquire the cause of this strange, secular winking, as if Medusa's eye were not yet still in death, let us observe the obscurations. We give the calculated time for the maximum obscurations during night. A little over four hours before or four hours after, will give us respectively the time of commencement or end of the phenomenon. We use sixtieth meridian, twenty-four hour time, one hour faster than eastern or railway time.

MAXIMUM OBSERVATIONS OF ALGOL.

Nov. 7th,	6.34	o'clock,	(A. M.)
Nov. 13th,	0.11	"	"
Nov. 15th,	21.00	"	(P. M.)
Nov. 18th,	17.49	"	(hardly dark.)
Dec. 3rd,	1.53	"	(P. M.)
Dec. 5th,	22.42	"	"
Dec. 8th,	19.31	"	"
Dec. 11th,	16.20	"	(hardly dark.)
Dec. 26th,	0.24	"	(A. M.)
Dec. 28th,	21.13	"	(P. M.)
Dec. 31st,	18.02	"	"

The next date can be found by adding two days, twenty hours, forty-nine minutes (nearly), to the previous date, and so on. In our next we shall endeavor to show the latest theory of this phenomenon. We hope our readers may in the meantime observe this strange sight for themselves. Its explanation opens up a most striking view of what is going on among the quiet, distant, twinkling orbs of heaven.

A NEW planet was discovered September 21st, by Herr Palisa, of Vienna. It is asteroid, No. 269. Our solar system is proving to have a great many more members than was anticipated by the older astronomers.

ANOTHER SEPTEMBER METEOR.—September 13th, 8.52 P. M., a meteor passed over a portion of Ireland in approximately the same direction as the one two nights later over Nova Scotia. It was extremely bright, vanished 25° or 30° above the horizon, and came within forty or fifty miles of the earth's surface. The sound of its concussion with the upper air, like that of distant thunder, reached the ear in three and one-half minutes. Perhaps we were passing through a meteoric orbit about the middle of September. If so the meteors are not such chaff as are the Leonids and Andromeds of November.

A MID-DAY STAR.—Some days since it was announced in the newspapers that a star was seen at Toledo at mid-day, and people, if they thought anything about the matter, probably wondered why it should be seen at mid-day there and no other place. The star is the planet Venus. It may now be seen in the sky any bright, clear day between sunrise and about two o'clock in the afternoon. During the mornings of this first week in November it is a very interesting object, with the sun in the eastern sky and the waning moon in the west. The best way to see it is to rise about half an hour before the sun, when this bright morning star is still brilliant in the eastern sky, carefully note its position, and make an imaginary arc in the sky of its course westward. It may be found any time during a clear day along this arc, about thirty-five or forty degrees in advance of the sun.

The total amount of the education grant in Newfoundland for 1886 was $119,500. Of this grants to the Church of England stand as follows: for general purposes, $29,834.08; books, apparatus, etc., $458.83; training teachers, $1,863.37; Church of England Academy, $3,077.49; encouragement of teachers, $917.66; providing superior education, $579.06; school in destitute localities, $835.33; Carbonear grammar school, $230.29; total, $38,795.20.

For the REVIEW.]

NEWFOUNDLAND SCHOOL SYSTEM ONCE MORE.

As was to be expected, Dr. Milligan, one of the "well paid Superintendents" of schools, has, after three months' hesitation, stepped out in defence of the system which we briefly criticised in the first issue of your admirable journal. Modesty might have suggested the propriety of leaving this work to other hands; but when trumpet-blowing is desired perhaps no one can do it so effectually as oneself.

I am sorry to observe that Dr. Milligan has largely mistaken personalities for argument. My article, he kindly says, is "a caricature," my "charges are misleading," "smack (?) of prejudice"—I am guilty of "glaring omissions" and "exaggerated assertions," of "extravagant deductions" and "unwarranted reflections;" the article is "a tirade," its terms "studiously vague," "fancy serves for fact;" "with light duties" I received "$2,000 a year, with manse and perquisites," and yet have the unparalleled audacity to "speak flippantly," to utter "grandiloquent sentences," and to show myself "exalted in my own judgment by my obvious prejudice."

I have no reply to make to these personalities, except to say that I should have expected a more gentlemanly style from the Reverend Doctor Milligan when writing for an educational review, and less angry passion in an aged minister in referring to an article which attacked a *system*, not a *person*.

There is no better evidence of the truth of my strictures than the fact that they have so roused the ire and disturbed the equanimity of one who, as I was credibly informed, had much to do in fastening the present sectarian school system on Newfoundland.

Your space will not permit me to refer at length to the many charges in the Doctor's prolix epistle, nor is there necessity. It will only be necessary to strip his charges of their superfluous verbiage to discover their weakness. Our article charged the Newfoundland school system with promoting bigotry and checking the growth of patriotism. What is the Doctor's answer? "The Education Act has a conscience clause and I never saw it violated." (Did it never occur to him that some things might happen in schools without his knowledge?) "The R. R. series of books are used." But let the reader bear in mind it was not said by us that the school teachers taught sectarian doctrines, or that the school books were sectarian in their character. What was asserted, and what we still affirm, is that the children of one sect are taught from infancy to look with jealous and unfriendly eye upon those of another sect. How are they so taught? By the very names of the schools which they attend, by the fact that those of one sect are separated from those of another. I myself have witnessed many an angry encounter between children attending these schools, in which the church names of the combatants were freely bandied back and forth with angry epithets; that of two children about seven years of age fighting on the public street, and saying, "you're a Wesleyan"—"you're a Catholic;" such a scene I have witnessed between two school children on their way from their separate schools. You say it might have occurred in a common school system. Yes, but the system which sends two playmates to two schools, simply and only because their parents go to two churches, is responsible for much of the denominational bitterness which confessedly exists, not only among children, but among adults, in the outports of Newfoundland. I charge the system with being the parent, or at least the promoter, of the spirit which leads every sect in the country to demand its proportion of the public offices, its quota of representatives in the government, its due share of members on every public committee, and which even boycotts merchants and mechanics of another ecclesiastical stripe. What should we think here in Canada of Wesleyans, or Episcopalians, or Catholics, getting up opposition to a government because there was one too many of the other sect in the cabinet, or of a public protest against a native governor whom the Queen had appointed because of his belonging to the religion of the minority? These are examples of narrowness of view that you cannot find in the land of common schools. In regard to the Doctor's other replies, I fail to see how the fact that some children of one denomination attend the schools of another (many do so from necessity, because their own people are unable to support a school at all, or unable to support an efficient school) or the other fact that a teacher of one denomination is sometimes employed by another (a very rare thing), I fail to see how these exceptional occurrences disprove the statement that the system propagates sectarianism.

Even the Rev. Mr. Harvey, whom Dr. M. quotes, who has very suddenly and unexpectedly become the apologist of a system, the introduction of which no one more strenuously opposed, admits that "society is in the theological stage of development—by which we mean that *sectarian considerations and feelings are paramount*, and *patriotic sentiments weak and powerless in comparison.*" He fails, however, to admit what no man knows more certainly, that the separate school system is largely responsible for the perpetuation and aggravation of this type of social life.

We charged that the system was expensive. Our words were that "it involved at least three times the cost of an *equally efficient* public free school system." but the Doctor overlooks the words *equally efficient*, and compares its cost with that of the greatly more efficient systems of N. S. and P. E. I. The Doctor knows that many an article costing $5 is vastly more expensive than other articles costing $10. No amount of special pleading can convince his readers that a system which involves the building and equipping and sustaining of three academies and training schools side by side, where the same branches are taught, and the same training given, and the only difference between which is their religious color, is not greatly more expensive than a system requiring only one academy and training school as in P. E. I. Wherever, too, there are two or three schools in a small community, where but for the religious question there would be one, it is equally plain that the expense is three-fold. Dr. Milligan's cavalier method of replying that because the cost of education is a dollar or two greater per pupil in Nova Scotia and P. E. I., therefore the Newfoundland system is inexpensive, will not deceive any one who thinks for a moment what the people receive for what they do pay. It is easy for him to disparage the accuracy of the census returns where they tell against him, but no one who knows Newfoundland will be found to assert that more than one in three or four of its adult population is able to read and write. There is no reason to discredit the census returns, which assert that only about 90,000 out of a population of over 190,000 are able to read and write.

Dr. Milligan has not stated the amount of teachers' salaries. They are undeniably small. Neither has the learned Doctor denied that "there are many localities unable to keep a school opèn more than a few months in the year, others are without a teacher for years together."

The great stock in trade argument of both Dr. Milligan and Mr. Harvey, is the religious argument. The system has affected even these learned gentlemen, rendering them more sectarian than they might otherwise be. Dr. Milligan, after alluding to the unsectarian systems of these Lower Provinces, and to the dual separate system in Ontario and Quebec, admits that "there might be perfect agreement between him and the writer in recommending one or the other of the above systems if only practicable, and circumstances were favorable;" and Mr. Harvey, after sketching our noble New Brunswick system, shows his real views in the sentence—"If our choice lay between this system and the one we possess, there would be no room whatever for doubt as to which is preferable."

But after these admissions they labor to show that our systems would be unworkable in Newfoundland. And what do they say? Not that the system has ever been tried and found wanting, for it has not been tried. Not that Newfoundlanders are a different race from New Brunswickers or P. E. Islanders; they are the same race. It is not that the free school system is unsuited to the genius of a free people. Listen: "We have 75,000 Roman Catholic fellow countrymen"—"75,254 out of a total population of 197,335 make separate schools unsuitable."

The religious difficulty is the great bugbear. But why should that be an insuperable hindrance? Less than five-thirteenths of the population are Roman Catholics. But is that any reason why the other eight-thirteenths should not have a school system that will suit the majority?

The system in P. E. Island is an example. It was obtained ten years ago by a strict party vote, and has worked well ever since. The Island population is more largely Roman Catholic than that of Newfoundland, being as follows: Catholics, 47,115; Presbyterians, 33,835; Methodists, 13,485; Baptists, 6,236; Church of England, 7,192; others, 1,028—Total, 108,891. "Since the system became the law of the land," writes D. Montgomery, Chief Superintendent of Education in P. E. I, "the Catholics have not given it any opposition, but have invariably availed themselves of its provisions, to give their children a good common school education. The Bishop of Charlottetown is a very estimable man who has done much for the cause of education, and although he is strongly in favor of separate schools he does not favor any strife over a question fairly settled at the polls."

Now, how does the system work in P. E. I.? The Act became law in 1877. The number enrolled in school then was 15,431. In 1886 the number enrolled in the public schools alone was 22,545, in private schools about 700, or an increase of over 46 per cent. in ten years, whilst the average daily attendance has increased over 50 per cent. Allowing for probable increase in population since the census was last taken, more than *1 in 5 of the population are attending school.* In Newfoundland the proportion is *only 1 in 7.* The average salary to male teachers of 1st class is $414.14; 2nd class, $280.75; 3rd class, $224.66. Female teachers $302.72; $220.00; and $161.58. I do not know the Newfoundland figures, but they are much lower.

Mr. Montgomery states that "the number over ten years of age who cannot read or write is very small indeed, and almost entirely confined to the Acadian population." I have spent many years on the Island and am well acquainted with its population, and I never met more than two or three who could not read and write. The contrast in this respect with Newfoundland is very great. If, then, in P. E. I. where the

Roman Catholic element is considerably larger than in Newfoundland, where the clergy of that church are equally opposed to the principle of common schools, and where the law was carried after a struggle at the polls, the system works well, as is evident from the results—"no opposition," "Roman Catholics invariably avail themselves of its privileges," "an average increase of 50 per cent. in daily attendance in ten years," "one in five of the population in school," "larger salaries to teachers," and therefore better men, and the almost entire absence of illiteracy—if the law is practicable and workable there, why not in Newfoundland?

In regard to inspection, it cannot be too strongly urged upon the people and government of Newfoundland that they should as soon as possible change the methods now in vogue for one in which educational affairs may be placed in the hands of *one* competent man. The idea of three men travelling over the same ground, one picking out Methodist schools, one Episcopalian, and one Catholic, making out and printing three distinct reports, in a country where much travelling is necessary, is too absurd. If Dr. Milligan could induce the Catholics, Methodists, and Episcopalians to settle in three distinct parts of the Island it would not be so bad; but until that is done the present system of inspection cannot but be weak, laborious, expensive, and very unsatisfactory. A great improvement even upon the present sectarian system would be to have *one superintendent*, with two or three inspectors under him, with an educational diocese for each; the public would then have some better guarantee that good work is being done, than in the three reports of rival sectarian superintendents.

Want of space prevents me from referring at greater length to the Doctor's production. I think, however, he will find it difficult much longer to persuade a long-suffering people, a people who feel the humiliation and expense of importing most of their professional men of higher standing, because of the poor educational facilities the country provides. I think he will find it difficult to persuade intelligent men, at least, that the present sectarian system is able to give a liberal education to all the children of Newfoundlanders; or that the spectacle of three "well-paid" superintendents, spending their summer months in travelling from bay to bay over the same execrable roads, looking in only upon schools whose pupils believe the same catechism as they do; and their winter months in superintending the training of three sets of teachers in three rival normal schools, is for edification.

It is not denied that some of these academies are well manned, that they have able teachers. Nor is it asserted that the superintendents do their work ill, or are overpaid for the work they accomplish. No attack is made upon men, but upon a system that is behind the age, and which, in spite of all Dr. M. is able to say in its favor, is inefficient, and therefore expensive, no matter how little it costs, and as P. E. Island teaches us, not the best or only system practicable in Newfoundland.

Thanking you for so much of your valuable space,

I am, yours truly,

L. G. M.

For the Review.]

THE TEACHERS' WORST ENEMY.

Now that the time has arrived when the school-room must be kept warm, teachers should prepare to fight their invisible but powerful foe, *carbonic acid* with its allies.

But first, it is necessary to believe that a thing exists before we attempt to remove it; and strange as it may seem, I have known most enthusiastic teachers struggle on, apparently ignorant of this enemy that was overpowering them.

Let us spend a day with one of these *morning* enthusiasts, and observe the subtle working of the poison.

The first hour passes so quickly and pleasantly that we have not noticed, until now, the flushed faces of the children and an uncomfortable, burning sensation in our own. I suggest the opening of a door or window; but some one feels a draught, so the opening is immediately closed. By this time the contents of fifty or sixty pairs of lungs have pretty well taken possession of the room and will soon have possession of our brains.

The next hour seems to drag; the pupils become inattentive; the teacher begins to wilt. Recess is welcome. The children get away as quickly as possible from the now disgusting atmosphere of the school-room; but Miss Novice remains at her desk, thankful to rest for a few moments.

Another hour adds to the poison, which all partake of freely, when Miss Novice complains of nausea and weariness. Her one object now is to get through the rest of the session by any means.

The afternoon is a repetition of the experience of the morning, with the addition of a headache and greater weariness.

Disappointed and exhausted, Miss Novice reaches home with no greater ambition in life than to be "let alone," and to sleep if possible; while the family vote her "cross and nervous."

But, you ask, how can all this be prevented?

I repeat, *fight*, Fight the fiend that robs the pleasant tone from your voice, the bloom from your cheek, the brightness from your eye!

"How?"

With the weapon of pure air.

If your school-room is not scientifically ventilated, raise the lower sash of the windows and set in a narrow board. This will give a steady current without a dangerous draught. Change the air of the room every half hour by throwing open windows and doors for a moment. Do not remain in the school house at noon. Ventilate your bedroom. Wear loose clothing to insure deep breathing. Engage in the study of some subject of natural science, as geology, botany, or astronomy, so as to be in the open air as much as possible after school hours, and I am sure you will become healthier and better men and women.

I. M. C.

Halifax, N. S.

[OXYGEN.—English authorities, at the late health exhibition in London, recommended 800 cubic feet of fresh air per hour for each pupil as a minimum. If possible it should be 1,000 cubic feet. Proper ventilation in winter time is one of the most difficult things to secure in this country.—ED.

SCHOOL AND COLLEGE.

Convocation, at the Dalhousie College, N. S., was on the 18th, when the inaugural was delivered by Prof. Seth: "Philosophy the Science of Sciences." $9,400.00 were won at the entrance examinations, as follows: Exhibitions, $400 each.—(Senior, entering 3rd year), 1st, Laird, P. E. I.; 2nd, Frazee, Dartmouth, N. S.; 3rd, Henry, Shubenacadie, N. S.; 4th, Putnam, Onslow, N.S.; 5th, Fulton, Stewiacke, N. S. (Junior, entering 1st year), 1st, Magee, Digby, N.S.; 2nd, Creighton, West River, N. S.; 3rd, Moore, Salisbury, N. B.; 4th, Brehaut, P. E. I.; 5th, MacMillan, P. E. I. Bursaries, $300 each.—(Senior), 1st Brown, N. S.; 2nd, Fraser, Halifax; 3rd, Macdonald, Hopewell, N. S.; 4th, Fraser, West River Station, N. S.; 5th, Harvey, Hants, N. S.; 6th, Davison, Halifax; 7th, Allison, Halifax; 8th, Burkett, Kentville, N. S. (Junior), 1st, Murray, P. E. I.; 2nd, Macrae, St. John, N. B.; 3rd, Tupper, New Glasgow, N. S.; 4th, Oliver, Digby, N. S.; 5th, Robertson, P. E. I.; 6th, Robinson, Pictou; 7th, McLean, Hopewell, N. S.; 8th, Jordan, P. E. I.; 9th, Turnbull, Digby; 10th, McMillan, Cape Breton. A larger number than ever before matriculated.

At the opening convocation of King's College, Windsor, Professor Hammond presented Rev. H. A. Harley, B. A. for his M. A., which was conferred by President Brock. Mr. John Medley Withycombe, of Trinity, Newfoundland, winner of the Almon–Welsford prize, read a Latin oration in praise of Major Welsford, the hero of Redan. The Stevenson scholarships were won by Mr. S. W. Symonds, Halifax, and Mr. J. M. Withycombe.

We have received the Catalogue of St. Francis Xavier College and Academy, Antigonish, N. S. It has a staff of seven professors. In 1880 a new wing was built at a cost of $11,000. Still later, His Lordship Bishop Cameron raised from the people of his diocese $21,155 to form an endowment. Its library is yearly increasing, as well as its physical and chemical apparatus. Seventy-five students have been enrolled during the year. The college year opened September 6th. All Nova Scotian colleges, we observe, are approximating this season for the commencement of the academic year. If the process of natural selection were allowed to come into free operation, our academies and common schools would also fall into the same lines, parallel with those of our natural conditions. The advantages are so great that the colleges are moving, although it necessitates the disjointing of the university work from that of the lower schools. Rev. Dr. McNeill, the President of St. Francis Xavier, completed his education in France and Italy, and is eminent as a scientific, as well as a linguistic and literary scholar.

The kindergarten movement at Truro, N. S., which has apparently followed the powerful appeal made first by Mrs. H. Condon, before the Alumni Association of the Provincial Normal School, last summer, is rapidly assuming a definite form. We understand that a first-class kindergartner from St. Louis—"one who can train"—is in view. An outfit has already been procured on very liberal terms from Selby & Co., Toronto. Thirty pupils are enrolled. The institution is intended to be a first-class one, carrying out Frœbel's idea without regard to cost, and therefore something which has not been attempted hitherto in these provinces. While the people of Truro enjoy great educational privileges as the gift of the province, they acknowledge their appreciation of the situation, we understand, by a generous desire to contribute from their own means for the advancement of educational reform. For the benefit of many of our teachers, we shall endeavor to supply short notes on the kindergarten methods from time to time.

We have received the Register of the School of Agriculture, Truro, N. S., for 1886–7. It is under the direction of Professor Hermon W. Smith, B. Sc., (Cornell). During the coming season it is proposed to invite leading farmers from different parts of the Province to come and lecture to the students upon those particular branches in which they have been pre-eminently successful, as dairying, fruit-growing, etc. The Legislature has an appropriation for the purchase of a farm. A programme of the work for the year is given; and in the appendix are published very creditable papers by students who have passed through the school. These are as follows: 1st, Feeding Animals, by A. A. Dechman; 2nd, Chemistry in some of its Relations to Agriculture, by Guilford R. Marshall; 3rd, Milk, by Alfred A. King. The graduating thesis of Mr. George B. McGill, Round Hill, Annapolis Co., N. S., on "Diseases of Plants," will shortly be published in a pamphlet.

Fifteen or sixteen Pictou Academy students are attending the Medical Faculty of McGill University, Montreal, this winter. A few are also attending the Arts Faculty and the Presbyterian College. They are known as *Pictovians*—not *Pictonians.* The latter title is that of the natives of Pictou County, the former is the title of the Academic Alumni.

The Victoria School of Art and Design, at Halifax, was announced to have opened October 31st. Mr. George Harvey, No. 43 Victoria Road, Halifax, is head master. The school starts under the best possible management, and we trust ere many years the provinces will reap no small benefit from the movement now inaugurated. Superior McKay, of the Halifax schools, is Secretary.

Kings College, Windsor, will celebrate its centennial in June, 1888. It will enter on its second century with a promise of usefulness and prosperity, we hope, that may widen with the years to come.

EDUCATIONAL NOTES.

Professor W. A. Antony, speaking in the American Association, section of Physics, on the importance of teaching physical science in the public schools, said that proper scientific instruction in the primary schools would teach children to avoid the mistake of attempting the impossible. While grammar should be put off to the last, language should be taught by reading, not by rules; the geography, after teaching the form of the earth, should be used only as a book of reference; and the commercial departments of arithmetic should be relegated to the business school; children in their earliest experiences have to do with heat, light, sound, movement and magnetism. Physics should be taught by calling attention to familiar facts, and then explaining them.—*Popular Science Monthly.*

Regarding the word "education," it should be remembered that there are two words in the Latin, spelled alike, but with somewhat different meanings: the one *educo*, educere (long *e* and *u*), meaning "to lead forth," "to draw out," etc., from which we get *educe* and *eduction*; the other *educo* (long *e* and short *u*), educare, meaning "*to bring up* a child physically or mentally," "to reach," "to educate," also "to nourish," "support," etc. It is from the latter, of course, that we get our word "education."

No one seems to be able to say precisely what the new education is. It seems to be rather an attitude, a tendency, than a definite principle or set of principles. Still, all its advocates would agree in certain general postulates. They would all hold that no study is valuable that does not develop power; that the cultivation of memory should be made subservient to the cultivation of the higher faculties of the mind; that instruction should be adapted to the condition of the pupil, and not to the wants of the future man; that greater stress should be laid on the natural sciences and on the modern languages and literature, and less on the languages and literatures of Greece and Rome; that the curricula of our schools in general require readjustment; that industrial training should form a part of the education of all classes; that the higher education of woman is as imperatively necessary as that of man; that teachers need specific professional training—and in all this we agree with them.—*Journal of Pedagogy.*

Every teacher, who is likewise what every teacher should be, himself a student, knows well what it is to reach the limit of capacity for useful mental effort. When the tension has been kept on for a time, and no very long time either, counting by hours of the clock, a point is reached at which the store of brain energy shows signs of exhaustion. The wheels revolve more and more slowly. Interest flags. Will effort becomes painful and unsatisfactory. The machinery has run down. The wise student soon learns to recognize the symptoms, listens to nature's warning, and, if possible, closes his books and goes forth for rest and recuperation. The same thing is constantly taking place in the school-room. The inexperienced teacher too often fails to perceive the cause; forgets that the power to sustain attention is, in the case of small children, to be measured by minutes, not by hours; and enters upon a struggle which is not only hopeless but mischievous, against the lassitude which he mistakes for idleness or perversity. The judicious teacher, on the other hand, quickly sees that the moment has come for rest and change, or recreation. A supply of fresh air, a few minutes of drill, or marching, or singing, a diversion to studies or exercises of a different kind, will speedily relax the strain, restore brightness and good feeling, and save the school from an afternoon of failure or disaster.

SCIENTIFIC NOTES.

The Hop Aphis, noticed in our question column last month as injuring the hop vines in Amherst, have done damage last year in the State of New York alone to the extent of over $200,000.

Seven years ago Ontario exported over $600,000 worth of clover seed. A new insect, the clover midge—of the same genus as the wheat midge, and the Hessian fly—made its appearance, and now the Ontario farmers instead of exporting clover seed, import it. A knowledge of the habits of the insect has led to a completely successful method of treatment.

The Report of the Department of Agriculture of the United States, under the direction of Hon. Norman J. Colman, Commissioner of Agriculture, for 1886, shows what a magnificent work is going on under government superintendence in every department of science bearing on agriculture in that country. Perhaps in no department will the great Republic compare more favorably with other nations than in their extensive application of scientific methods to develop the maximum productiveness of their country.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Picton, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

1. "He reckoned without his host;" what is the derivation of this?

The phrase, "He reckoned without his host," suggests its origin quite clearly. It is intended to point out the folly of computing the cost of what one has got at an inn, without consulting the person whose duty and whose right it is to make up the charges. And it is taken from a very old proverb, current in England since three hundred years ago, at least. Perhaps the explanation of the proverb, given in *Bailey's Dictionary*, published in the first quarter of the 18th century, may be interesting. *"He that reckons without his host must reckon again."* This, though a tippling proverb, has a farther meaning than persons making their own reckoning at a tavern or ale-house, and is usually applied to such persons who are apt to be partial in their own favor, flattering themselves with the advantages they fancy to be on their side in any affair, and making no allowance for the disadvantage that will or may attend them; so, *Chi fa conto sensa l'Hoste conto due volto*, say the *Italians*; and *Qui compte sans son hoste il lui convient compter deux foix*, say the *French*.

W. P. D.

LITERARY NOTES.

Dr. J. G. McGregor, of Dalhousie College, is the author of an elaborate treatise on kinematics and dynamics which has just been issued by McMillan & Co., London.

Seidel's Industrial Instruction, translated by Miss Margaret K. Smith, of the Oswego (N. Y.), Normal School, is to be published by D. C. Heath & Co in a few days. This book presents a philosophical exposition of the principles underlying the claims of hand labor to a place on the school programme. All educators interested in the present discussions concerning industrial education are sure to welcome this timely and valuable addition to the literature on the subject.

D. C. Heath & Co. will publish this week, Nature Reader, Sea-side and Way-side, No. 1, by Julia McNair Wright. This is the first of a series of Primary Readers intended to awaken in young children a taste for scientific study, to develop their powers of attention, and to encourage thought and observation, by directing their minds to the living things that meet their eyes on the road-side, at the sea-shore and about their homes. This First Reader treats of crabs, wasps, spiders, bees, and some univalve mollusks. The Second Reader will treat of ants, flies, earth-worms, beetles, barnacles, star fish, and dragon flies. The Third Reader will give lessons in plant life, grasshoppers, butterflies and birds. Each Reader is furnished with review questions sufficient to cover the leading facts presented. The books will contain numerous illustrations especially prepared for this series.

The Dictionary of the Micmac Language, prepared by Rev. S. T. Rand, is now in the hands of the printer. Mr. Rand says: The work will contain about four hundred pages of quarto, with two columns on each page. New, beautiful black type has been procured for the purpose, so that the English is clearly distinguished from the Micmac. Several forms of eight pages each have already been struck off, and I am much pleased with their appearance.

BOOKS AND EXCHANGES.

THE NEW CANADIAN COUNTING HOUSE BOOK-KEEPING—containing a complete elucidation of the science of accounts by the latest and most approved methods, business correspondence, mercantile forms, and other valuable information, designed for the use of counting houses, business colleges, academies and high schools, by S. G. Beatty and J. W. Johnson, F. C. A. Seventh edition, revised and enlarged. Published by the Ontario Business College, Belleville, Ont. Pages, 324; price, $2.00. This volume is divided into three parts, each distinct in its own special design, but progressively arranged. Part I. contains a complete and comprehensive course of book-keeping, illustrated by examples. Part II. is for more advanced pupils, and includes wholesale and retail merchandising, manufacturing, settlement of estates, steam-boating, municipal book-keeping, warehousing, banking, farm accounts, church accounts, practical office work, joint stock companies, etc. Part III. contains a comprehensive summary of Ontario Law, forms of business papers in general use, and the principal laws which govern them, full instructions on commercial correspondence, with a variety of model business letters, short practical methods of computing interest, percentage, partial payments, partnership settlements, etc., besides valuable rules for lumbermen, mechanics and farmers, illustrated by examples. We know of no more complete work of the kind.

TEXT-BOOK OF NEWFOUNDLAND HISTORY—For use of schools and academies, by the Rev. M. Harvey, F.R.G S., author of "Newfoundland—the Oldest British Colony;" lectures, "Literary and Biographical;" articles, "Newfoundland and Labrador" in the Encyclopædia Britannica, etc., with map and illustrations: Boston, Doyle & Whittle, publishers. The readers of the REVEIW have already been introduced to the Rev. Moses Harvey, the best known man of Newfoundland. This little work of some 200 pages is written in the smoothest and most effective manner of any similar text-book which has come to our knowledge. Although we have perused Mr. Harvey's larger work—a history which reads almost like a romance—we have read over again the abridged story with a pleasure which perhaps was only enhanced by our previous knowledge. The thread of development is never lost in the necessary change of scene; and a bird's eye view of the whole is given with details sufficient to give color and life to the panorama. A series of appendices give most valuable statistical information respecting the Island. Any one who has not the time to read the larger history of Newfoundland, can in this volume save the time and obtain the history in a very readable and beautifully digested form.

SEVENTY LESSONS IN SPELLING—A complete collection of different common words with definitions and pronunciations, etc., arranged for the use of business colleges, academies, etc. Retail 35 cents; sample 25. Williams & Rogers, publishers, Rochester, New York. This work contains 3,500 common words likely to be misspelled. It gives definitions, pronunciations of difficult words, rules for the use of capitals and abbreviations, etc. As long as the tyranny of customs exacts our present abominable spelling of English, so long will convenient spellers be a necessary and profitable tax upon all.

THEORETICAL AND PRACTICAL BOOK-KEEPING—By double and single entry, for use in business colleges, common schools, high schools and academies and for self-instruction. Retail price, $2.50. Wholesale (net), $1.35. Williams & Rogers, publishers, Rochester, New York.

This firm publishes a series of books for commercial instruction. There is the "Introductive Book-keeping," 104 pp.; "Book-keeping", 175 pp.; "Complete Book-keeping," 225 pp.; "Commercial Law," 225 pp., etc. "Complete Book-keeping is the cover title for the above, and it well deserves the distinction. Its typographical execution is very fine, most of the sets being in beautiful script black, and read as in real accounts. First we find 80 large pages devoted to the system of double entry, then 18 to single entry; 4 to a system for the executor of a will; 6 to a petty ledger; 8 to a cash method: 10 to shipping and commission; 16 to wholesale; 12 to retailer's books; 8 to manufacturing; 18 to business practice; 54 to banking, and a valuable appendix of 10 pages more. Sample copies will be mailed with a view to introduction at wholesale prices. It is one of the text-books of the Rochester Business University, which is a sufficient recommendation of its completeness.

THE ENGLISH LANGUAGE, its Grammar, History and Literature, with chapters on composition, versification, paraphrasing, and punctuation, by J. M. D. Meiklejohn, M. A., Professor in the theory, history and practice of education in the University of St. Andrew's, Scotland. D. C. Heath & Co., Publishers, Boston, New York and Chicago, 1887. Price $1.40, post-paid When this book was announced some time ago, we expected from the scholarly reputation of its author that it would be another addition to the list of valuable educational works which D. C. Heath & Co. have been publishing for the past few years. We have not been disappointed. Of all the text-books on the English language—and their name is legion—this, for conciseness, clearness, and originality, seems to bear off the palm. It is in comparative grammar—in the history and origin of our language, word-building, and strong etymological features—that this work will prove a boon to students, as well as in the sketch of English literature which comprises half of the 400 pages which make up the book. There is not a single page in the book which is uninteresting or overloaded with details. While it is simple and comprehensive, it is marvellous how much of English language and literature has been compressed into such a small form without the sacrifice of clearness. It is designed to cover a four years' course in high schools, academies and colleges, and should come into general use.

THE LIGHTS OF TWO CENTURIES, edited by Rev. E. E. Hale. A. S. Barnes & Co., New York and Chicago, 1887. $1.70, post paid. Price to Reading Circle members, $1.40, post-paid. This interesting work, illustrated with fifty portraits, and containing sketches of the most famous names of literature, science and art for the past two centuries, will be thoroughly appreciated by the teacher and student. The work has been specially prepared to meet a want in education and general culture. It is written in a pleasing style, the most prominent points in the lives and works of these master minds intelligently set forth, and though a minor point yet one of great educational value to the student, the pronunciation of difficult words is given in the text. It is not only adapted to the wants of teachers and students, but is of absorbing interest to the general reader. It is a book of over 600 pages, of beautiful finish, and has so many excellent features that it should be widely read.

EXERCISES IN ENGLISH SYNTAX: Published by C. W. Bardeen, Syracuse, N. Y., 1887. This does not contain exercises in false syntax to be corrected. The author in his preface very properly observes: "Correcting false syntax is by no means a sure test of the ability to use correct language." Acting on this idea he carefully excludes such examples, and in their place gives exercise in composition, which ensures a large amount of drill on the chief rules of syntax.

The Study of Rhetoric in the College Course, by John F. Genung, Ph. D., Professor of Rhetoric in Amherst College: Boston, D. C. Heath & Co., 1887. Price by mail, 25 cents. This is another of those excellent and cheap monographs on education. It is an earnest and scholarly plea for better methods of instruction in the higher English, and contains an excellent outline of work that may be done with effect in our colleges.

Volapuk, No. 3: E. Steiger & Co., 25 Park Place, New York. "A sketch of the world language, invented by J. M. Schleyer." 5 cents, retail; less than 10, 3 cents; 10 to 100, 2 cents; 100 to 1,000, 1½ cents. This is the third pamphlet of the series. It gives a brief outline of the grammar and structure of the language in the compass of five pages. We notice that Steiger & Co. have on hand over fifty different works on Volapuk. This is an extensive literature, considering that Schleyer published the first grammar of Volapuk in 1879.

Cæsar, Helvetian War, by W. Welch, M.A., and C.S. Duffield, M. A., with Notes, Maps, Exercises and Vocabularies: Published by MacMillan & Co., London and New York. A cheap and altogether capital book for beginners in Latin translation. 18 mo., about 100 pp. Eighteen pence.

The *Popular Science Monthly* for November has an admirably illustrated paper on the stars of autumn, being a continuation of the series—Astronomy with an Opera Glass, by Garrett P. Serviss. The striking manner in which it is written, with its clear illustrations, make it a very seasonable article.....*St. Nicholas* for November is not only attractive—it is useful. Note the following grain of wisdom in "What's in a Name?" The writer says: "When you are in doubt about a word, hunt it down patiently. It is severe work; but you will find it, even at first, interesting, and at last endlessly amusing. * * If you read the pages of a good work letter by letter—that is to say with real accuracy—you are forever more in some measure an educated person...The *Illustrated London News* is interesting to every member of a family, old or young. Its illustrations of life and scenery in all parts of the world give it an educational force making it invaluable for interest and instruction in the family circle. The constant success of the American edition of this periodical is not by any means a surprise when even the contents of a single week is considered. Take for instance the issue of October 29th. The supplement alone, giving an excellent colored portrait of Prince Bismarck, is a valuable souvenir to possess, while in addition there are pictures of the Nizam of Hyderabad, two pages devoted to illustrations of the State of Ireland, another page of Our Troops in Burmah, one of Border Sketches in Kelso, one of Bristol Cathedral, one of the death of Cæsar, and a most attractive picture of a little girl and a dog entitled Speak! The reading matter is as interesting and complete as ever, while the price for all is only ten cents. All newsdealers have it, and the New York office is in the Potter Building. *Science* for October 28th has several valuable articles on education, including "British Universities and the Training of Teachers," and "Aspects of Education," by Oscar Browning. *The Century*, with the November issue, begins its thirty-fifth volume and eighteenth year, issuing a quarter of a million copies. This circulation is beyond that of any other magazine. This brilliant success has been due to good management, and the fact that it is a magazine for the people, treating living subjects with ability and earnestness.... *The Swiss Cross* for November is at hand. Not the least important feature in this well-conducted magazine are the intelligent reports of observations made by young students in scientific matters. ....The Toronto *Weekly Mail*, the supplement of which is made up largely of agricultural and educational topics, is an excellent paper for one who would keep abreast of the times.

NEW BRUNSWICK NORMAL SCHOOL.

ENTRANCE EXAMINATION.—SEPTEMBER, 1887.

ENGLISH GRAMMAR AND COMPOSITION. *Time*, 1 *hr.* 30 *min.*

1. Frame sentences or give quotations illustrating the proper use of the following words, viz.:—Mutual, nice, splendid, awful, rugged, clever, smart, expect, calculate, prefer.

2. Correct the errors in the following sentences, giving reasons for your corrections:—He had spoken only a few words. Who shall I give it to? The ship laid at anchor. Neither he nor his brother sing. If I had of known that the day would have been so fine, I should certainly have went. (*Comment particularly on the foregoing sentence*).

3. "Knowledge is better than riches." Express this thought at length in your own words.

4. Write a letter to the Principal of a Normal School, conveying your wish to be admitted as a student. Exhibit the *form* of the letter fully.

5. "Mid pleasures and palaces *though* we may *roam*,
Be it ever so humble *there* is no *place like* home."

(*a*) Analyze generally and in detailed form the above passage. (*b*) Parse the italicized words. (*c*) Who wrote it?

6. Explain the terms noun, adjective, inflection, gender, person, voice, participle, infinitive, weak and strong (as applied to verbs).

7. Write (*a*) plurals for brother, chorus, strife, court-martial, mouse-trap; (*b*) feminine forms for bachelor, fox, songster, sultan, earl; (*c*) comparative and superlative forms from late, near, old, up, fore; and (*d*) past tenses and past participle from see, saw, knit, spring and freeze.

N. B.—Any *two* of the first three questions, together with any *three* of the last four.

INDUSTRIAL DRAWING. *Time*, 1 *hr.*

1. What do you understand by the terms *Free-hand drawing*, *geometrical drawing*, and *object drawing?*

2. Compare and contrast the following, pointing out wherein they agree and wherein they differ.

(*a*) A straight line, a perpendicular line and a vertical line.

(*b*) A compound curve and a reversed curve.
(*c*) An ellipse and an oval.
(*d*) A square and a rectangle.

3. Draw from memory, without the aid of ruler, compasses or other mechanical help, *two* of the following, making each drawing not less than two inches wide.
    (*a*) A rosette composed of simple curves symmetrically placed in a square.
    (*b*) A vase outlined by compound reversed curves.
    (*c*) A design composed of conventionalized forms.

USEFUL KNOWLEDGE. *Time*, 1 *hr.*

1. Make a list of the principal forest trees of New Brunswick, and name the industries connected with each.

2. Write what you know of the useful minerals of New Brunswick from the following heads: mineral, where found, uses.

3. Explain the beneficial results to be derived from (*a*) ploughing, (*b*) the uses of manures, and (*c*) rotation of crops.

4. "A house is merely an outer garment." "The human body may be compared to a steam engine." Explain these statements.

5. Name the rules of health to be observed in respect to (*a*) food, (*b*) clothing, (*c*) exercise, (*d*) rest, (*e*) ventilation, (*f*) the use of alcohol in any form.

N. B.—Any four of the above taken as a full paper.

SUPERIOR SCHOOL COURSE.

The following course of instruction for superior schools, was submitted to the N. B. Provincial Institute in July last.

STANDARD IX.

Reading. Royal Reader No. VI.
Writing. Prescribed text-book.
Arithmetic. Equation of payments, profit and loss, exchange between Canada and England, square and cube root with applications.
Composition. Text-book completed, a written translation semi-monthly from the classics. *Modern Course*—One English classic.
Geometry. Hamlin & Smith, to the end of Book II.
Algebra. Investigation of formulæ in general results, first section of simple equations and problems G. C. M. and L. C. M.
Geography. *Classical Course*—Ancient geography. *Modern Course* — Remaining British colonies, general geography of Asia, with special reference to the geography of India, and problems on the globe.
History. Swinton's Outlines.
Drawing. Continued.
Grammar. *Modern Course*—Parsing and analysis from the reader.
Latin. Bryce's Second Reader. Extracts from Cæsar.
Greek. Bryce's First Reader, as far as the verbs.
French. (Optional).
Plant Life. (Optional).
Animal Life. Hygiene.
Physics. Hotze's text completed.
Book-keeping. Single entry.
Mensuration. Parallelograms, polygons, quadrilaterals and circles.

STANDARD X.

Reading. Royal Reader No. VI.
Arithmetic. Stocks, consuls, arbitrations of exchange, principles of logarithms.
Composition. Dalgleish's advanced text to versification. Essay once a fortnight. Translation from classics fortnightly.
Geometry. Hamlin & Smith, Book III.
Algebra. Todhunter, to problems involving two unknown quantities.
Geography. Europe in detail. Problems on the globe.
History. Swinton's Outlines.
Drawing. Continued (for modern course.)
Grammar. Same as in Standard IX.
Latin. Virgil, Book I. Latin prose composition.
Greek. Bryce's First Reader completed.
French. (Optional).
Plant Life. (Optional).
Animal Life. Physiology, Brown's text.
Book-keeping. Double entry.
Mensuration. Land surveying, Loomis' trigonometry.
Political Economy. Mrs. Fawcett.

STANDARD XI.

Reading.
Literature. An English classic. Versification.
Trigonometry. Plane trigonometry, Loomis.
Philosophy. Wormell's Natural Philosophy. Dynamics.
Geometry. Hamlin & Smith, Book IV.
Algebra. Todhunter, through quadratic equations.
Geography. Text-book completed.
History. Swinton's Outlines.
Drawing. Continued for modern course.
Latin. Virgil, Book II. One oration of Cicero.
Greek. Extracts from Bryce's Second Reader. Homer, Book I, to the end of line 303.
Political Economy. Continued.

S. C WILBUR,
P. G. McFARLANE,
PHILIP COX,
J. W. HICKSON. } *Committee.*

OFFICIAL NOTICES.

Elementary Natural History.

The Board of Education has been pleased to prescribe for use in the Public Schools of the Province, Professor Bailey's Elementary Natural History, published by Messrs J. & A. McMillan, St. John.

This little work treats of Minerals, Plants, and Animals, with special reference to those of our own Provinces, and is designed as a text-book for pupils in Standard IV. in ungraded schools, and for pupils in advance of Standard V. in graded schools.

The requirements of the Course of Instruction in respect of these subjects have not heretofore received that amount of attention which either their educative or practical value deserves, owing chiefly to the want of suitable sources of information. As this want is now supplied by means of this elementary

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work, it is hoped that the subjects of which it treats will hereafter receive that attention due to their importance, and be taught in harmony with the principles recommended by the author.

On sale at the several bookstores at 30 cents.

WILLIAM CROCKET,
Chief Superintendent Education.

Education Office, Fredericton, N. B.,
October 15th, 1887.

N. B.—It is in contemplation to provide and keep on sale at the bookstores at a trifling cost, for such schools as may desire them, small collections of specimens to facilitate the *practical* study of the work.

Arbor Day.

With the view of removing a doubt that seems to exist as to the permanency of the provision respecting Arbor Day, I wish to state that the following regulation, made April 6th, 1887, is operative in any year until otherwise ordered:

"That teachers be authorized, with the sanction of Trustees, to set apart any Friday that may be deemed most suitable during the month of May or June for the purpose of improving the school grounds and planting thereon trees, shrubs, and flowers, such day to be known as 'Arbor Day,' and when duly observed credit to be given for it as a lawful teaching day.

WILLIAM CROCKET,
Chief Superintendent Education.

Education Office, Fredericton, N. B.,
November 3rd, 1887.

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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A. H. MacKAY, B. A., B. Sc.,
Editor for Nova Scotia.

PRINCIPAL ANDERSON,
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G. U. HAY, Ph. B.,
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EDITORIAL NOTES.

WE take this opportunity to wish our readers one and all A HAPPY CHRISTMAS and A PROSPEROUS NEW YEAR.

OWING to the demands made on our space in this number we are obliged to hold over editorial matter and several valuable contributed articles.

THE commendations that we frequently receive from leading educationists on the contents and appearance of the REVIEW, and our rapidly increasing subscription list, are very encouraging.

THE special committees appointed by the educational conventions of New Brunswick, Nova Scotia and Prince Edward Island recommend that an Interprovincial Educational Convention be held during the third week in July, 1888, at St. John, and that the Executive Committee of each Provincial Convention be asked to approve of this and appoint sub-committees to arrange the details.

THE National Association of teachers of the United States meets next July, in San Francisco. Arrangements are being made for cheap excursions to the great city of the West. Perhaps the managers of the Canadian Pacific Railway would be induced to give a rate across their line, that would tempt some of our Canadian teachers to take a trip through our great Northwest, and at the same time attend the Convention. Who will move in the matter?

WHEN we want scientific apparatus for our schools we generally order from Britain or the United States, because we know what we want is to be had there. Yet we have to pay duty on the most of such apparatus, because the Customs Department has been informed that such goods are made in Canada. If that is a fact why will not these manufacturers properly advertise their wares? Getting equal value for our money, we would prefer patronizing home industry. There should be a considerable demand for chemical and physical apparatus in our schools, judging from the modernized curricula which have been authorized. When teachers enquire of us where a small laboratory, for instance, can most cheaply get its stock, we are forced to point them abroad at present. Where can we find these Custom House manufacturers? Canada is great. Is it in Atlantic, Mediterranean, Pacific or Arctic Canada? There should be a fortune for at least one Canadian in this line of usefulness.

"Several years ago two boys were seen tormenting a cat. Having twisted a cord around its neck, they were in great delight, exclaiming, 'See how its eyes stick out!' Was it inherited disease? Not at all, but example and nothing else. Their father was a zoologist and had been seen by them frequently putting live snakes in alcohol, and pinning struggling bugs to boxes."—*The School Journal*, New York, Oct. 8th, 1887.

We give the above our unqualified contradiction. The boys were brought up under the care of a goody-woody-simpleton of an old woman, who used to lecture them on cruelty to animals, but was often seen killing the beautiful green larvæ of the Pieris on her cabbage plants by the terrible death of compression between the earth and the sole of her slipper, at the same time profanely ejaculating, "those horrible grubs." The professor chloroformed his insects, and even after their death did not mutilate them. The very same old woman instructed one of these urchins to break the back of a snake which was only sunning itself for a few moments on her tennis lawn, by percussion with a great rough rod; and never as much as applied a patch of sticking plaster or a drop of pain-killer to its quivering mangled body. The professor wouldn't allow even the skin of his graceful captive to be scratched, and instead of paining it, gave it a copious draught of the best spirits, so that its last moment was the most exhilarating in its life, and then placed it in a respectably labeled glass jar on a museum shelf.

If the boys were brought up under the eye of the zoologist, they would have long before been directed in a more sensible manner, than to allow them to satisfy the promptings of a morbid or misdirected curiosity as the occasion might suggest. There is much inanity, if not gentle insanity, exhibited by certain people in these matters. With so gushing a philotherosity as to shed tears over the miseries of a neglected broomstick, they have sometimes signalized their life work by tormenting the lives out of their own kind. Philotherosity is the word—a morbose affection for wild beasts above all other things in the world.

TEXT-BOOK OF VOLAPUK.

The following letter from the American member of the Academy of Volapuk, formed at the late Congress at Munich, Europe, has been received by Principal MacKay, who feels inclined to endorse it from experience.

Charles E. Sprague, 1271 Broadway,
New York, N. Y., Nov. 18th, 1887.

Principal A. H. MacKay,
Pictou Academy:

Dear Sir:

I am very sorry that the class in Volapuk took up so very defective a book as Seret's for the study, because I am afraid it will have disgusted them with the whole thing. Mr. Seret, neither understanding German, English nor Volapuk, has made a translation of a Volapuk grammar from German into English, with a result only paralleled by the Portuguese author of "English as She is Spoke!" Not to appear to condemn him on my own judgment alone, I quote what Prof. Kerckhoff, the leading French Volapukist, said in "Le Volapuk," August, 1886.

"W. A. Seret.—Grammar of Volapuk; the language of the world for all speakers of the English language.

Nous déclarons en toute franchise à l'auteur de cette petite grammaire qu'il a rendu un bien mauvais service à la cause du Volapük en Angleterre. Peu familiarisé avec les finesses de la langue anglaise, (l'auteur est Hollandais), ne connaissant que superficiellement la langue allemande, et n'ayant probablement que des notions élémentaires de grammaire générale, M. Seret a commis une série de bévues, les unes plus étranges que les autres. * * *

Faut il s'etonner que le nombre des Volapukistes de Glasgow (residence de l'auteur) ait diminué, depuis la publication de cette cacographie."

The dictionary has since been added and is as bad as the grammar. *e. g.*

Schleyer: jinön, scheinen, (videri).
Seret : jinön, to shine.

Very truly yours,
Charles E. Sprague.

As a number of letters were received asking where the above named book referred to in our November issue could be procured, we hasten to insert this caution.

ON THE TEACHING OF GEOGRAPHY.

When we remark the interest that is taken in geographical subjects by the intelligent portion of the reading public on both sides of the Atlantic, the growth and increased number of geographical societies, and the energy and enterprise which distinguish their operations, we might reasonably infer that geography would occupy a conspicuous place in the school curriculum, have a fair proportion of time allotted to it, and engage the best efforts and enlightened attention of the teachers. No doubt there are many schools in which this subject is admirably taught, but there are many also in which the results do not realize our expectations; where the success is far from commensurate with the time which is expended upon the study, and the efforts put forth both by teachers nd pupils. Nor is the cause of this failure hard to discover. It is simply because in so many cases no attempt is made to attract the attention or win the sympathy of the children for the subject. Too often the geography lesson is a mere appeal to the memory, a reiteration of dry, dead and uninteresting names, productive neither of instruction nor happiness in the school-room, and forgotten soon after leaving it.

And yet books of travel are read with avidity, and the advance of the explorer as he penetrates, with uncertain footsteps the untrodden regions of some dark continent, is followed with eagerness and enthusiasm. A human interest permeates the book, centered, indeed, in the traveller, but radiating in all directions to the mountains, rivers, lakes, strange peoples, products, religion, climate, in consequence of their connection with him. Hence, we venture to affirm that a reader, rising from the perusal of Livingstone's travels on the Zambesi, will have a clearer conception of the geography of that river than most of our boys who have finished their school course have of the St. Lawrence or the Mississippi. If we can, therefore, interweave into our instruction in geography personal incident, historical fact, information respecting people and wild animals and vegetable products, and at the same time impress upon the class a clear conception of the shape and proportions of the country and its physical features, we will not only relieve the geography lesson of its dreariness, but render it what it ought to be—an intellectual and pleasurable exercise, which pupils will anticipate with delight, and for which they will prepare with readiness and zeal.

Doubtless our geographical education ought to begin at home, but it must not end there. "Canada first" is our motto here as it is in other matters, but we should not fail to remember that Canada constitutes only a small fraction of the earth's surface and contains a much smaller fraction of its population. The mother country, with its dependencies, and the neighboring republic, to which we are bound by so many ties; the empires, kingdoms and republics, on the other continents and upon this, all demand a share of our attention. And we have invariably found that the boy who possesses the most intimate knowledge of the geography of the world in general, is better versed, in all essential particulars, in that of his own country, than the boy who has never passed beyond its boundaries. The fact is, teachers find it hard to create enthusiasm in regard to what every one already imagines that he is sufficiently well acquainted with, and therefore prefer foreign to home subjects as an instrument in training the geographical tastes of their pupils. But in younger classes the subjects ought to be chiefly, though not entirely, Canadian, and the instruction imparted orally without text-book or preparation on the part of the pupil. Thus the danger would be avoided of creating a distaste for geography from the difficulty of pronouncing and remembering names when read as compared with the ease and impressiveness which accompany the living voice of the teacher. And even at this early stage we would recommend the practice of map-drawing, for not only would the children be usefully occupied, but the eye would be trained in form and comparison, and a fairly accurate and indelible picture of the country impressed upon the mind. Should this training be commenced early and prosecuted with vigor and skill throughout the period of school attendance, by home drawings from the map and school exercises from memory, the results would be highly satisfactory.

Map-drawing cannot be recommended too strongly or advocated too strenuously. It is at the base of all thorough teaching of geography. By its introduction when time is abundant and subjects are few, an ease in the use of pen and pencil is acquired which is of great service afterwards when more elaborate work is required. When from the senior pupils, when time is of great importance, a more detailed product is demanded, when the position, size and characteristics of one country are to be compared with those of another, and the physical features have to be delineated, products noted and towns marked down, the map can be sketched from memory with celerity and correctness, because frequent practice has produced a photograph on the mind which can be readily transferred to paper or slate; and the teacher, when he undertakes to give instruction in physical geography, and traces the course of ocean currents and winds, the distribution of man and other animals, and the configuration of the earth's surface, its mountains, plains, plateaus and volcanoes, will assuredly experience the comfort and satisfaction which are consequent upon a ready and accurate acquaintance with the details of geography already mastered; and we are confident that there are few successful teachers of history who have not availed themselves of its assistance in representing upon the blackboard the vicissitudes through which a country has passed, its losses and gains of territory, the campaigns of its generals and its decisive battles, and have failed to pronounce such a method inspiring and helpful.

In teaching geography great care must be taken to arrange the materials for each lesson. The sea coast, with its gulfs, bays and headlands, ought to be kept distant from the mountain and river systems, and these fixed in the memory before the chief towns are located. In noting the towns, by following the coastline, the teacher marks the seaport of the country. and while tracing the course of the rivers, the business marts of the interior. But as railways have in some degree taken the place of rivers as the great arteries of trade, and railway centres have expanded into towns, some of them of great size and importance, it is incumbent upon the teacher to include them in his scheme for the towns and to rank them as of equal importance with rivers. But here, as under all other heads in geography, the memory must not be burdened by an excess of names, many of them of little consequence. The teacher should aim at a more or less intimate acquaintance with the geography of a country, so that when towns, rivers or mountains are mentioned as the scene of incidents in the current history of the time, or are mentioned in the commercial or telegraphic column of the newspaper, they may be familar, in name and locality. But when any country becomes of special interest—a scene of war, revolution or constitutional change, the opportunity may be laid hold of to convey a more minute knowledge of the details of its geography. The incidents as they occur and are read in the newspaper will impress more thoroughly on the memory the names of the places. We are certain that Assouan, Dongola, Korti, Metemmeh, Khartoom and the physical characteristics of the Valley of the Nile, are better known at the present time because of their association with the expedition for the relief of General Gordon than from any other circumstance; and who does not attribute much of his familiarity with the country embraced by the Hei Rud and the Moorghab or the Valley of the Irrawady, to the scenes which were recently enacted there and attracted the attention of the civilized world?

But we are aware of no means so certain to rivet the attention as the connection of places with the career of some well-known and distinguished traveller. We still remember the time when the meetings of the Royal Geographical Society were impatiently waited for, to hear of the fortunes of Livingstone, and to read his marvellous story, as he gradually lifted the veil which had so long wrapped in mystery the central regions of Africa. Then it was a positive pleasure to follow the track of his explorations, and still, we doubt not, the narrative retains its charm. A skilful teacher knows how to use such materials with advantage, and in his hands the geography lesson becomes one of the most interesting and effective of the course.

We then say that to teach geography successfully the pupil must not be doomed to the dreary task of committing to memory names which to him are only associated with pain and sorrow, but be taught the use of the map and to reproduce it himself, and to have associated with the materials of his text-book every relative fact, historical, biographical, commercial or physical, which may relieve the mere mention of names, and serve to impress them so firmly on the mind that it will be impossible to forget them. This need not entail extraordinary preparation on the part of the teacher. He ought, at any rate, to be able to sketch on the blackboard the map of the day, and to insert, as the lesson proceeds, the places named in the text-book. Possessed of the information, which as a well-informed man ought to be his, and with the assistance of a good cyclopedia, he should not find it a difficult task to prepare himself to discharge with credit this part of his duty. But we would say, Let him not overtax the memory of his pupils. Let him aim at what is useful and possible at putting the pupil in the right way to acquire and retain facts for himself, and let him arouse his curiosity to read books of travel that he may become familiar with the people of other countries, their habits, government, religion, literature and products. And when the boy leaves school and enters upon the active duties of life, if the knowledge obtained at school has been supplemented by his own efforts, these acquisitions serve to broaden his range of observation and comparison, liberalize his views of men and things, lift him beyond the narrow boundaries which circumscribe his own community, make him feel that there is a world beyond, and that there are institutions and interests besides those that influence him and his compatriots.

REV. EDWARD THRING, M. A.

IN MEMORIAM.

The educational world has met with a great loss by the sudden death of Rev. Edward Thring, the distinguished head master of Uppingham school, England. He died on the 22nd of October, after an illness of but a few days.

From the English journals, all the most important of which contain lengthened notices of his remarkable character and career, we learn that he was seized with the illness which proved fatal while conducting the communion service in the school chapel on the morning of Sunday, Oct. 16th. The sermon which he was to have preached to his boys in the afternoon was found lying on his desk, ready for delivery —and has since been published—a last touching evidence of the intense earnestness with which he strove to influence the hearts and consciences, as well as the minds of his boys. Friends in this country had, within a very short time, received from him letters written with all his accustomed vigour and enthusiasm, in which he spoke of the profound interest with which he was watching educational movements in Canada and the United States. He was particularly gratified by the wide circulation which some of his ideas had received in the pages of the July number of the REVIEW. On his friends in America, as on those in England, the news of his death has fallen with painful suddenness, and a profound sense of loss. Wherever the English language is spoken, teachers who have read his books and addresses will feel that they have lost one who had a rare gift at once to lead and inspire. No English schoolmaster of the present day has made so powerful an impression on educational thought outside of England, as Mr. Thring. He did this in spite of the fact that his prose writings are not those of a finished literary artist, nor written in a specially popular style. But they have in them something of infinitely greater worth - the magnetism of intense earnestness and the clear evidence of profound thought—bent on teaching truth. No genuine teacher ever came away from contact with his mind without feeling strengthened, and inspired with higher motives for his work. It is doubtful, on the other hand, if any one can fully enter into the spirit of much that Mr. Thring has written unless he is himself one who has actually wrestled earnestly and sincerely with the task of influencing young minds. To such as have done this he is a guide and prophet—to the machine teacher and examination crammer he probably will remain a mystic or enthusiast.

In his work as master of a large English public school, he furnished a singular example of a man, who, brought up in the very atmosphere of educational tradition and prejudice, had shaken these off, and made himself a pioneer in advanced teaching methods. Manual training in working wood and metal; the free use of music and art in education; variety of study and employment in school life—methods towards which we are only feeling our way in America—were all parts of his regular system. His idea that to secure honor for education among children, its everyday appliances and surroundings should be made in all possible ways excellent and beautiful, is one which ought to gather force until it has blotted out of existence the unsightly and cheerless schoolrooms in which most of the education of England and America has been carried on for centuries.

We see it stated in more than one English paper, that in carrying out his educational reforms Mr. Thring not only spent his great energies, but also sacrificed the earnings of a laborious life. When the master of another great and fashionable English school resigned a few months ago to accept a position of easy affluence, it was stated that he carried away as the result of his headmastership, a fortune of fifty thousand pounds. Mr. Thring, on the other hand, after all that he did for education, has left to his family little more than the heritage of a great name. The English people have always been proud to heap rewards and honors upon their military heroes. Possibly they may yet learn the art of recognizing heroism and self-sacrifice in other and perhaps higher walks of life.

Doubtless the full story of Mr. Thring's life and work will yet be written. If so, it will be a record of single hearted devotion to educational truth which may well be an encouragement and stimulus to all true workers. The sketch of his career, which we published a few months ago, makes it unnecessary to speak further of it here, but we add a few extracts from the English press.

In its notice of him the Pall Mall *Gazette* says:

> No one who ever came into contact with him, even for a short time, could forget the impression left by his vivid personality. The downright directness, the transparent honesty, of the man, made themselves instantaneously felt, and won for him much devoted friendship. He might have been a great soldier if he had not been a great schoolmaster, for he was a born leader of men.

The *Times'* obituary speaks of him as—

> A man of striking gifts and singular strength and separateness of character, who made his name a synonym for the school in whose service he lived and died....But his praise was not merely to have made a little state into a great one. Far more was his work remarkable as the successful effort to embody in visible shape, truths of education which he was the first to give expression to....Certainly he worked out in action his idea with a consistency of plan, a fidelity in details, a burning energy, an untired enthusiasm, a readiness to take pains and make sacrifices, and, beyond all, an indomitable quality of faith in the triumph of principle which set on his life's work a firm stamp of originality.

In the English *Journal of Education*, the head mistress of Cheltenham College says:

> There has passed to his rest one whose influence in the world of teachers has been great, but will, I believe, become greater, now that he is no more seen. Never, perhaps, has there been a life more devoted to the work of education in its highest sense.

A writer in one journal refers to him as a "hero among schoolmasters," while a correspondent of the *Guardian* quotes the opinion of one who knew him well, that "He had more elements of greatness than any man I ever knew."

In the Cambridge University *Review* we read:

> Dispirited workers, tremulous beginners, enthusiastic venturers, were from all sides turning for light and encouragement to this "old man eloquent," and came away inspired and heartened by the lovableness of that mellowed strength. Above all, perhaps, the women teachers of England will acknowledge a debt to him.

And again—

> A heroic life ended most hero-like. It must be the task of other hours or of other pens to cast an estimate of that life, and attempt the portraiture of a character so strong and separate, so original and so originative, so versatile and so profound. These hasty lines are but a glance at the campaigns of a soldier of education, who has fallen, a veteran, but in arms.

The influence of a man who made so strong an impression upon his contemporaries cannot cease with his death. The world is poorer for his loss, but the work of teaching has been ennobled by his great example.

The cut shown above is from a photograph taken a few years ago.

N. S. SUMMER SCHOOL OF SCIENCE.

The following course is suggested for a first year certificate in physiology in the Nova Scotia Summer School of Science:

I. Anatomical data, ...	50 points.
II. Chemistry and Physics of Digestive, Circulatory, Respiratory and Nervous Systems, ...	150 "
III. Applications of Laws of Physiology to individual and social life, ...	100 "
Total, ...	300 "

FERNDALE SCHOOL.

No. VII. — Classes of Insects.

T. We have had several lessons on insects and we now know something about them. We know there are several kinds of them. Can you tell me some of the kinds?

S. Yes; the kind with scales like colored dust on their wings.

T. Very good. Any other?

S. The kind with hard wing covers over their real flying wings.

T. Any others?

S. Flies and fleas.

T. Yes, that will do, we shall call the principal kinds orders. Why should we put insects in orders?

S. I suppose for the same reason scholars are put into classes. Those most alike are put in the same class.

T. Well, there is something in your reason, but you will soon know more. Now we shall look over some of those we have collected, and see if we can put them into a few orders or classes. What might we call this kind of work?

S. Classification.

T. Well then, we shall see how we can classify them into the *nine* orders in Sir William Dawson's book. I think you would like to take his classification for two reasons. I know you would. First, because he is a great scholar; and secondly, because he is a Canadian—our own countryman.

Order I. has no wings. Have you seen any of that kind?

S. Yes, bugs.

Another. Some bugs have wings.

T. Naturalists put bugs without wings in the same order as bugs with wings, because they are so much alike in every other respect except the wings. Do you know any others?

S. Lice and fleas, I suppose.

T. Well, not exactly the fleas, but they are so much like the lice that we shall have them in the next order. Now many of the names in zoology are taken from Greek; and we shall try to construct a name. I shall give you the material. The Greek for wings is *ptera*, and *a* means without.

Chorus. Aptera.

T. Correct. Write down, "Order I. *Aptera.*" The next are very much like the lice, but when hatched from their very minute eggs, they are extremely small maggots, and then, as the caterpillars do, they change into insects of the flea kind. They also appear to have just the beginnings of wings, but they are generally invisible. The Greek for invisible is *Aphanes*. Make a name for this order.

Chorus. Aphanesptera.

T. It is hard to sound the *s* before *p* in that word, is it not?

S. Yes, Aphaneptera.

T. A better word; but they spell it with an *i*. Write down, "Order II. *Aphaniptera.*"

Here is the male "Horse-Breeze Fly." How many wings has it?

S. Two.

T. The Greek for twice is *dis*-

Chorus. The order is Disptera—no, you can't pronounce the *s* easily there—Diptera.

T. Correct. "Order III. *Diptera.*" Their life stages are the egg, the maggot, the pupa, then the perfect fly. What Diptera have you noticed?

Chorus. Mosquitoes, house-flies, blue-bottle flies, horse-flies, daddy-longlegs.

T. The fourth order contains the butterflies and moths. How many wings has this "swallowtail."

S. Four.

T. And so has the bee and the wasp. Would you put them in the same order?

S. No; it wouldn't do then to make a name for these orders from the Greek for four. But the butterflies and moths have scale dust on their wings, and the bees and wasps have none.

T. The Greek for "with a scale" is *lepidos*. What is the name?

Chorus. Lepidoptera.

T. Correct. Write down "Order IV. *Lepidoptera.*" The bees and wasps and *this ichneumon fly*, which is one of the deadly enemies of the great caterpillar of the Emperor or Cecropia Moth, have also four wings, but the transparent membrane is quite naked. Greek for "of a membrane" is *hymenos*. What is the name?

Chorus. *Hymenoptera.* Order V.

T. Here is the *Aphis*, a plant-louse; but in spite of its name, which would put it in the *Aptera*, and the general appearance of its wings, which would place it in the *Hymenoptera*, it belongs to Order IV., the *bugs* proper.

The bugs generally have the outer pair of wings only partly membranaceous, and that towards the tips; but many like the aphis figured here, and the cicada, or singing locust, have the wings nearly like the Hymenoptera. The order is named from the first kind. The outer wings are generally half membranaceous and half leathery. Greek for half, *hemi*.

Chorus. Order VI. *Hemiptera*.

T. Here is a dragon-fly. It has four wings; but its delicate veining is a most striking feature. These fine veins are commonly called nerves, although they are not really nerves. Greek for nerve is *neuron*.

Chorus. *Neuronptera*—no: *n* doesn't sound well. Neuroptera. Order VII. *Neuroptera*.

T. Very good. Here are specimens of the terrible Western locust. You can scarcely distinguish them from our common grasshopper. The under wings are folded like a fan under the straight outer wings. Greek for straight, *orthos*. Orthography, orthoepy, orthodoxy, all common words with the same root.

Chorus. Order VIII. *Orthoptera*.

T. Here I have come to the last. You know the beetle with its two hard sheath-wings, called *elytra*, covering up its thin flying wings. Greek for sheath, *coleos*.

Chorus. Order IX. *Coleoptera*.

T. Repeat the names of the orders simultaneously.

Chorus. Aptera, Aphaniptera, Diptera, Lepidoptera, Hymenoptera, Hemiptera, Neuroptera, Orthoptera, Coleoptera.

T. Make English names for these as near the meaning of the roots as you can.

Chorus. No wings, invisible wings, two wings, scaled wings, membrane wings, half-and-half wings, nerve wings, straight wings, sheath wings.

T. Which names do you like best.

S. I don't think the English names are any plainer, once you know how the other names are formed; and besides, the English names don't sound so well, I think.

T. Perhaps so; you can have your choice. English words have been made from the names of these orders. You can call the mosquito a dipter, the grasshopper an orthopter, the beetle a coleopter, and so on if you like.

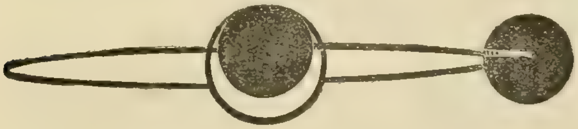
AMONG THE CONSTELLATIONS.

No. IV.—The Demon Star and the Star of Bethlehem.

> "How distant some of the nocturnal suns;
> So distant, says the sage, 'twere not absurd
> To doubt, if beams set out at Nature's birth
> Are yet arrived at this so foreign world;
> Though nothing half so rapid as their flight."
>
> —*Young*.

> "A single star
> Sparkles new—set in heaven."
>
> —*John H. Bryant*.

About one hundred and fifty stars have been observed to change their intensity of light to such an extent as to be classed as variable stars. These have again been sub-divided into five classes, of which the most interesting includes those which undergo rather rapid changes at regular periods of time. *Beta Persei*, commonly called Algol or the Demon Star, is one of this class. We hope some of our readers were so fortunate as to have observed the phenomenon of obscuration described last month. Various theories have been formulated to explain it. But none can account for its uniform brilliancy for sixty hours, followed by the peculiar rate of diminution of brilliancy for about four hours and a half, and the same rate of increase for the next four hours and a half, so satisfactorily as the "planetary eclipse" theory. Some of the most eminent astronomers of the present day have measured the rate of darkening and lightening of this star, which, according to Royal Hill, is as follows: Let the brilliancy just before obscuration be indicated by 1·000. Then each successive half hour it was found to be ·968, ·920, ·861, ·762, ·685, ·566, ·480, ·433, and at the minimum, ·416. In fifteen minutes it commenced to brighten in the reverse order. This exactly corresponds to the rate at which light from a luminous disc whose diameter is *one* would be obscured by the transit of a dark disc of diameter 0·764 across its surface a little to one side, so that the eclipse would be *nearly*, but not quite, annular. The following diagram, drawn to scale, illustrates the point:



The dark body is the planet revolving around the luminous sun, Algol. The planet is shown at its greatest elongation, and at the middle of the eclipse. The plane of its orbit passes nearly through our earth, so that could we see it, the dark planet would appear to describe the narrow ellipse drawn in our diagram while revolving around Algol. Of course, both Algol and its planet really revolve around their common centre of gravity. Now Algol is so distant that the most powerful telescope cannot show its disc, and therefore an ocular demonstration of the presence of this dark companion sun cannot be given. The relative sizes of the two are inferred from the rate of the obscuration. The relative dimensions of the planetary orbit is deduced in this way: The length of more or less obscuration is nearly nine hours, which is coincident with the interposition of the whole or part of the planetary disc between us and Algol. During this time the planet moves the distance of Algol's diameter plus its own,—equal to 1·764 times Algol's diameter. If it moves that far in nine hours how far will it move in sixty-nine hours, in which time it completes its revolution? 9 : 69 : : 1·764 : 13·5+ That is, the planet's orbit must be, roughly speaking, 13·5 the diameter of Algol. The diameter of the orbit, which is 13·5÷3·1416, is about four times the diameter of Algol. So that our diagram above is in good proportion.

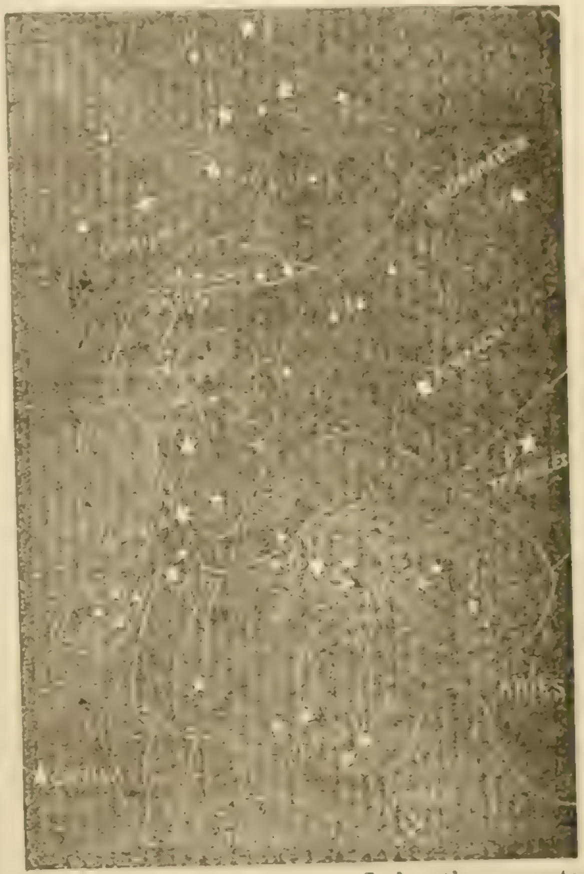
Next, let us estimate the distance and magnitude of these bodies. If you were to look at the steeple of a church from the street and see the ball on its spire projected against a star in the sky, you would notice on taking a few steps along the street that the ball on the spire changed its apparent position against the sky. If the church were a quarter of a mile distant, instead of being near at hand, a change of a few steps would make a very small change in position of the steeple ball against the sky. This apparent change of the position of the ball against the sky might be called its *parallax*—for your change of position. The more distant the church spire, the less its parallax for a change of a given number of paces. Given the amount of change of position and the observed parallax, it is only a simple problem in trigonometry to find the distance of the spire of the church from you.

Well, this world swings us through space. Six months after to-day we shall be about 185,000,000 miles exactly on the opposite side of our sun. Those fixed stars which are nearer than the more remote, like the ball on the church spire, must appear to change their places. This apparent change of position may be called their annual parallax. Practically it is found more convenient to call the half of this displacement the parallax. The parallax of several stars have been accurately measured. The one having the greatest parallax is *Alpha* of Centaurus. When the earth is at one point of its orbit, *Alpha Centauri* is displaced from its mean position nearly *one* second of arc. Six months after it is displaced nearly *one* second of arc in the opposite direction. Total displacement, nearly *two* seconds of arc. Let us calculate its distance by a simple approximate method. If from *Alpha Centauri* as a centre two radii be drawn to opposite points of the earth's orbit, these two lines will contain an angle of about *two* seconds of arc. For so small an angle, the diameter of the earth's orbit will nearly coincide with the arc between the two radii. If the radius is taken as unity, the arc of 180 degrees is the well-known 3·14159+. Divide by 180° and we get ·0174533 as the arc of 1°. Divide by 60 and we get ·0002909 as the length of arc of 1 minute. Divide by 60 again, and we get ·00000485 the length of arc of 1 second. For a radius equal to unity, 2″ of arc would therefore be ·0000097 in length; that is, if the distance of *Alpha Centauri* from the earth be represented by one, then the diameter of the earth's orbit will be represented by ·0000097. But the diameter of the earth's orbit is known to be approximately 185,000,000 miles. Therefore the following proportion will give us the approximate distance of our nearest fixed star ·0000097 : 1 :: 185,000,000 : distance of star. From which it appears that in round numbers the distance of a star whose annual parallax is 1″ is 19,000,000,000,000 miles—over nineteen millions of millions of miles. But the most careful and persevering efforts have failed to obtain any parallax for Algol. It may be taken for certain that were its parallax one-tenth of a second, it would have been detected. For these small angles the distance may be said to vary as the parallactic angle. As Algol's parallax must at least be ten times less than that of Alpha Centauri, its distance must at least be ten times greater. That is, we know for a certainty that Algol is at least 190,000,000,000,000 miles distant from us. Light travelling at the rate of 160,000 miles per second, takes about the third of a century to reach us from it. The eclipses we have been observing, or may this month be observing, occurred about the time of the Crimean War, over thirty years ago, and have been speeding without rest towards us ever since.

Again, our sun's disc subtends an angle of 1,924 seconds. Remove it away 320,000 as far as it is, and it becomes a star as small as Algol—a mere point of light subtending an angle of ·006 seconds. Its parallax there would be *six-tenths* of a second. Remove it six times farther away until its parallax becomes only *one-tenth* of a second. Our sun would then be a star of the sixth magnitude, while Algol is of the second magnitude. Assuming the surface of each to be of equal intrinsic brightness, it is evident that Algol must be several times greater than our sun—at least six times greater in diameter. This would make Algol over 5,000,000 miles in diameter, and its invisible companion about 4,000,000 miles in diameter, and the diameter of its orbit indicated in our diagram, about 25,000,000 miles.

These were once, probably, two luminous suns revolving around their common centre of gravity, forming what would appear to us a double star. The smaller has already grown so cold by the radiation of its heat, that its luminosity has gone. And since Goodricke in 1784 determined its period of revolution around its primary to be 2 days, 20 hours, 48 minutes and 58·6 seconds, its orbital revolution has been accelerated by six seconds. It thus gives promise of falling in the remote æons of futurity, into its central sun. The glazing eye of Medusa may then once more blaze forth and suddenly startle the worlds by the apparition of a brilliant of the first magnitude.

Now turn to the constellation Cassiopeia. Near that small star, *Kappa*, which is next the large one, *Beta*, at the top of our cut, on the 11th Nov. 1572, appeared a brilliant star which rapidly increased in magnitude until it was brighter than Jupiter, and could be observed at noonday. In less than seventeen months it became invisible, and has not since been seen. About 315 years before or thereabouts, in the same quarter of the heavens, a similar apparition seems to have occurred. And there is some kind of evidence of such a phenomenon, over 300 years previous to the last mentioned one. The idea struck somebody, that here was a variable star which became luminous every 315 years. Five times 315 is 1575 years. The star must then have appeared three or four years before 1 A. D., or about the time of the birth of Christ. If so, it is due now. 1572+315=1887. Our readers know where to look for it. We cannot vouch for the accuracy of the observations on which the speculation is based. But this point is forced on our attention—that in the silence of the immeasurable depths of the heavens, mighty forces are in unceasing motion and in every stage of development; and that when we least expect it, a "Star of Bethlehem" may burst forth in dazzling glory from the impact of invisible, Titan orbs, which had been for countless æons preparing for the display.



For the Review.]

THE GEOGRAPHY OF THESE PROVINCES SIXTY YEARS AGO.

Among my old papers I turned up, the other day, a thin pamphlet entitled "A Manual prepared for the small map of Nova Scotia. For the use of schools. Halifax, Printed at the 'Nova Scotian' office, 1829." It contains a colored map—said to be "a new map"—of Nova Scotia, Cape Breton, Prince Edward Island, and part of New Brunswick, dated 1825. The information contained in the book is put wholly in the form of answers to questions, a common plan in those days. Some of the facts to be learned from these answers and from the map may be interesting to the grandchildren of the pupils who used the manual.

It appears that Nova Scotia then consisted of "ten counties and four districts." These were Cumberland, King's, Annapolis, Shelburne, Queen's, Lunenburg, Hants, Halifax, Sydney, and Cape Breton, with the districts of Yarmouth and Argyle belonging to Shelburne, and the districts of Colchester and Pictou, annexed to Halifax. The County of King's included what is now the township of Parrsboro in Cumberland. Annapolis included what is now Digby. Shelburne included what is now Yarmouth County. Sydney County included what is now Antigonish and part of Guysboro, as far as St. Mary's River,—the remainder of Guysboro belonging then to Halifax County. Cape Breton Island formed but one county.

Westmoreland, New Brunswick, is marked on the map as covering the present counties of Westmorland, Albert and about one-third of Kent. The boundaries of several other counties in both provinces must have been altered considerably since this old map was made.

One notices several names which have since disappeared from the map, and have probably passed from the knowledge of the present generation of people. The shiretown of Sydney County was "Dorchester," now known as Antigonish. In Cumberland we find "Remsheg" and "Remsheg Bay," where now the name is Wallace Harbour. In Colchester, where Great Village and Economy are marked on recent maps, we find on the old map "Londonderry" and "Lower Derry." We are also told that "Indian River rises in the north of the County of Shelburne, and falls into the Atlantic Ocean at Cape Roseway." What river is this? In Prince County, P. E. I., in Lot 41, on the shore of Richmond Bay, there is marked a town of "Dartmouth," not to be found in our day.

The old forts are distinctly shown: Forts Cumberland and Lawrence, near the border; Fort Monckton on Bay Verte; and Fort Ellis, near Stewiacke.

This name, "Stewiacke," as we now have it, was in those days, "Souiac;" and several other names have changed their spelling, as "Kent" Township in Hants, "Port Matoon" for Port Mouton, "Quaquo" and "Petcudiac" in New Brunswick; "Chatecan," where we now have Cheticamp, C. B. A curious change, of which the writer had heard many years ago, is from "Indian Bay," in the township of Sydney, C. B., to *Lingan* Harbor. The French for "Indian" —*L'Indien*—became corrupted into Lingan. So, also, Gabarus (pronounced *gab-a-roos)* is said to have come from *cap rouge* or else *chapeau rouge.* Possibly a similar corruption of sound may explain the fact that where our present maps show *L'Archeveque* Point, the map of 1825 has "Cape Hinchinbroke."

H. C. C.

Fredericton.

For the Review].

HOW TO AVOID "CRAM."

We were glad to learn that the Review was gaining a foot-hold among the teachers of these Lower Provinces. May it continue to increase. Every teacher should take it and try to make it a thoroughly useful paper. We hope that every phase of the educational work and system will be ventilated in it; that teachers will not be afraid to express their convictions, based upon experience, no matter what the topic may be.

The Ferndale series are helping many a teacher in object lessons, besides affording valuable information.

Your remarks on over-pressure gave us much pleasure. It touched upon a very important feature, viz., the over-crowding of subjects into our course of study. As you say, "It is absolutely impossible to find time for all," and in the hurry and mental confusion arising from this multiplicity of subjects, the pupil has no time to *think,* which is a very serious defect. From experience we find that pupils now cannot think themselves out of a difficulty by any means as readily as when they had fewer subjects with more time for each. The Boston *Herald* of the 19th ult., contains a lengthy article, in which a similar course of study is advocated: "Too much time is being devoted to theories and hobbies;" and this is the very reason that our school course is overcrowded. The chief complaint is against the introduction of elementary science, which consumes much time which ought to be spent with other subjects. We raise no objections to elementary science, for whether we are right or wrong, we think that children ought to be taught something about those things with which they daily come in contact; but where is the time to do this work thoroughly? Are there not other subjects that could be cut down without injury to the pupils? Take for instance, English history; is it necessary that all the events and the dates thereof be memorized —covering a period of nearly 2000 years? Yet, if a pupil wishes to pass the ordinary examination into an academy, he must thus prepare himself. He studies, not for the sake of knowledge, but merely to *pass.* A most immoral motive. Talk about cram! The whole sin of cram lies at the door of those who set the examination papers, and those publishers who advertise "just the thing for candidates for such and such an examination." Again, do not our text-books contain much that is not absolutely essential for the pupils to learn? In a prescribed text-book it is written of James I., "His tongue was too large for his mouth and his eyes were wild and rolling." This and many other passages may be valuable information, but we fail to see it. We notice also that but little is said about the government and society during the various periods, and much is said about a lot of characters about whom the majority of the people care but very little. A few days ago, an educated gentleman, who has for several years past read the papers of youthful candidates for the academy, told us that he has come to the conclusion that lads from ten to fourteen years of age should not be required to study history as outlined in our course of study and compelled to do by the examination papers, for their minds are not sufficiently developed to discriminate and assign events to their proper places. However, be this as it may, it is one of the points upon which we desire the REVIEW to express an opinion for the benefit of the examiners as well as for the teachers.

Secondly, do you not think that too much time is spent in analyzing and parsing? Rev. Dr. Burns, of Hamilton, stated that "studying rules of grammar cannot make a man a correct speaker;" and Dr. McLellan emphatically condemned diagrams for grammatical analysis. And yet how much of school life is spent in this very thing; a system that should have long ago become obsolete, and it would have been, were it not for the examination craze, and still more crazy papers that are being set.

There is no doubt but that most of the papers are beyond the judgment of the candidate; perhaps the fault is not in the papers, but because candidates go up too young! Which is it? Will some of your readers give some hints as to the best methods of training pupils in English?

A very good article, entitled, "English in the High School" is in the *Educational Journal* of the 15th inst. We quote a paragraph on English grammar: "In teaching grammar I would put no text-book at all in the pupils' hands. Every text-book I have ever seen is, from my point of view, highly defective, and any one of them in the pupils' hands would create confusion. Grammar is a science, the subject-matter of which is the sentence and its parts. The function of a science is to investigate its subject-matter, and to seek for general principles, by means of which to explain facts. It is the business of the teacher to guide the pupils in the work of investigation, not to do it for them, much less to compel them to memorize the results arrived at by previous investigators, and stated by them in the form of definitions and rules, many of the former being incorrect, if not nonsensical, and most of the latter being entirely unnecessary." (Mr. W. Houstan, M. A).

Thirdly, is there not too much time devoted to geography? Of what advantage is it to $\frac{99}{100}$ of our pupils to know about Timbuctoo or Williamette and scores of other places so frequently found on their examination papers? Complaints have been made in the Montreal papers that children are "made to learn the capes and isles of Europe," instead of the French language which is so absolutely necessary to the people of Montreal. The question arises, is it really necessary that every known cape, island, town, river, lake, mountain, county of England, Scotland, Ireland, of each province in the Dominion, etc., together with the population, the length of the rivers and the height of the mountains be memorized? If so, then do not expect teachers to serve up the whole course of study as it should be done. The course would be right enough if every pupil would complete it even through college, but a very, very small percentage of our boys ever get through college, and if all are trained by this course, how many leave school not by any means fitted to become either first-class mechanics, merchants or citizens. Would it not be a good plan for the "Interprovincial Convention" to consider and revise the course of study now in use, and draw up one for the Maritime Provinces? What objection could there be against these provinces having the same course of study and to use the same text-books? Then let us have a course of study containing more of those subjects which, when learned, will make our boys when they leave school, as the greater number do, at fourteen years of age, become better prepared to earn a living than they now are. These and not the college bred boys should have the preference. They should be trained particularly in those subjects most needed by them, and they should not be required to waste time with memorizing things which they do not understand, and when learned are as soon forgotten.

X.

For the REVIEW.]

S. P. C. A.—THE BANDS OF MERCY.

It is said that "man is the only animal that sheds tears," yet we frequently meet in literature with incidents in which the lower animals are represented as manifesting their grief in this way. The steeds of Achilles are said by Homer to have wept at the death of Patroclus:

> "Immovable
> Beneath the splendid car they stood, their heads
> Down, drooping to the ground, while scalding tears
> Dropped earthward from their eyelids, as they mourn'd
> Their charioteer."

Matthew Arnold also relates in his "Sohrab and Rustum," that the horse of the mighty hero shed tears as he beheld his master dead upon the sea shore. And there are other references of a similar character. This may be a poet's fancy, but it is certain that the relationship between man and the lower animals has always been very close; and those who have come under domestication have developed, through man's instruction, a wonderful intelligence, and become his worthy companions. We know that through all time animals have been objects of reverence and sometimes of worship; and among the Egyptians, for instance, the slayer of certain animals was punished by death. This being the case, it seems somewhat of a reflection upon our more enlightened civilization that it has been found necessary to form societies all over the world to prevent cruelty to animals, who in such great measure are dependent upon man's kindness. It seems almost impossible that a man should ill-use his horse, for instance, when self-interest, if nothing else, should lead him to treat him kindly and keep him in good condition.

But the fact that there are constant and innumerable cases of the most inhuman treatment of animals reveals a state of things not at all flattering to our ideas and hopes of mankind as it ought to be after so many years of civilization. Yet there can be no doubt that the S. P. C. A., beside preventing cruelty to animals, will have a good effect in a reactionary way upon those who practice such cruelty. Especially will this be the case in the Bands of Mercy, since they have to do almost entirely with the children, who have not in any way become hardened in cruelty and can be taught to be humane in their treatment of all the animals.

To many this seems the most hopeful and promising branch of the Society; for it is more and more becoming the conviction of mankind that to work a reform of any kind, or to further the progress of the nations in all that may be called true civilization, it is necessary to begin with the little children. This, the "Ladies' Humane Education Auxiliary of the S. P. C. A." have undertaken as their part of the work, and the results already attained by the Bands of Mercy in St. John are in every way commendatory and promising. No one who has attended the several gatherings in the St. John Mechanics' Institute of the united Bands can fail to have been impressed with the importance and quality of the work done. It is an inspiration in itself to see these hundreds of little ones gathered together for the express purpose of hearing and singing about kindness to animals, which must of necessity lead up to kindness to each other and lessen very materially the sum total of those debasing influences to which so many little children are constantly exposed. Depend upon it, this is the surest way to *prevent* cruelty to animals. To be sure the parent Society can keep ever her vigilant eye upon those who abuse their beasts of burden, but if the Bands of Mercy became sufficiently extended there would cease to be this necessity, for the lessons of kindness learned by the children would rarely be forgotten.

For all these considerations I would heartily recommend the formation of Bands of Mercy in the common schools, Sabbath-schools, etc., not forgetting the annual gathering in the Institute, with its pretty songs, bright banners and happy children's faces.

F.

St. John, N. B.

For the REVIEW].

THE KINDERGARTEN.

FRŒBEL'S CLAIMS TO CONSIDERATION ON THE PART OF EDUCATIONISTS.

Some considerations drawn from a survey of Frœbel's career inspire the careful thinker with great confidence in his principles and praxis.

His lonely childhood, with its marvellous powers of introspection and self-analysis, gave him an insight into the thoughts and feelings and desires of childhood from the earliest stage of consciousness, which stands, we think, unique in human experience. He may fairly claim the title, "Discoverer of the laws of childhood." Again, the deep religious tone of his whole nature, the key-note of which was, "Seek ye first the Kingdom of God and His righteousness," joined with the fact that this Kingdom was not, in his thought, a dominion restricted to the spiritual sphere, but was to exert its supremacy over mind and matter in all their relations, add weight to his teachings. Frœbel's idea stood thus: Man in conscious harmony with himself, with nature, with humanity as a whole, and, finally, in unity through the ripened powers of his complex nature, with the Divine

Creator. Then again, as an original thinker and a practical educationist, he retraced the steps taken in childhood and youth till he stood by the cradle—a man with the experience that comes only from actual contact with life at many different points. There he found that the great impediment to human progress lay in the lack of culture for those germs of child-nature which lie latent but are commonly left to chance. If these germs and instincts are to be developed and become subject to the beneficent laws of evolution, they must receive a training which is founded on an intelligent application of the laws of human nature; these laws can only be deduced from the study of human nature itself. This nature is so complex that it must be observed in its earliest and simplest stages if observation is to be of practical value.

Another incentive to study Frœbel lies in the fact that while he was "no mere peddler of other men's wares," he was thoroughly acquainted with the history of educational thought and practice in ancient and modern times, so that he wasted no time and energy in futile experiments. His fiery enthusiasm for reform rested on a sound *conservative* basis, which led him to recognize the fact that the progress of the human race must be *a coherent whole.* He saw that the buds and blossoms of promise that delight us to-day are borne on a tree whose roots strike deep down into a remote past, and that the growth which will be a joy to future generations derives its nourishment from the same source. Thus, while sympathizing with the *aims* of revolutionists in 1848, he reprobated those methods by which men hoped to better the present by rudely severing its connection with the past. All the crude thought and feeling represented by socialism, nihilism, and anarchy, was distasteful to him, because all these schemes impose restraints from *without,* while his principles demand development from within. His watchwords are, *freedom,* by spontaneous obedience to law; *individuality,* limited only by the benevolence that results from the cultivation of the social and moral instincts; *self-activity,* expressing itself in works of use and beauty, and a harmonious development and co-ordination of all the faculties.

A few visits to a *good* kindergarten will soon settle the question as to whether his principles work well in practice. All is life and stir, but no confusion. There is no restraint, for although the *reign of law* is, *consciously,* in the teacher's thought, and skilfully applied, the children, too immature for abstraction, enjoy its benefits *unconsciously.* Innocent gayety enlivens the scene. See these little ones accompanying *piano* a song with rhythmic clapping of the hands, now with soft delivery, then loudly, then softly again; but every now and then breaks out, at the director's call, a perfect *fortissimo* which is a safety valve for animal spirits and yet renders the softer parts of the play more beautiful by contrast. The power of the social instincts as a factor in education is conspicuous here, where free expression and interchange of childish ideas are encouraged. The timid and dull are drawn out and stimulated, while the rude and domineering feel the force of public opinion and soften under its mild influence. The *technical-æsthetic* principle is applied in building, weaving, interlacing, sewing, pricking, and especially in tablet-laying and laying forms with sticks preparatory to drawing. Thus manual dexterity is gained; the intellectual powers are strengthened by their constant expression in concrete forms, to create which demand the observation of number, size, form, color, and directions of lines and angles to produce an harmonious whole. The sentiment of beauty is fostered along with the creative instinct, so that the *love of work* is a marked characteristic of children trained in the kindergarten. C.

Halifax.

ON TEACHING THE PRINCIPLES OF CIVIL GOVERNMENT IN OUR SCHOOLS.

[A synopsis of the address of Geo. R. Parkin, M.A., Head Master of the Collegiate School, Fredericton, N.B., before the York County Teachers' Institute.]

Any one who, at this day, comes before a body of his fellow-teachers with suggestions for adding something to the already wide range of school work, should have strong reasons to support his proposition.

The subjects which are forced upon our curriculum, either by the fixed requirements of intellectual training or the widening demand for practical application of school study, are already so numerous that the earnest teacher's chief anxiety is to resist the tendency to superficial work which is well-nigh inevitable where the area to be covered is so large. Few teachers will doubt that we are already attempting too much rather than too little for the highest educational advantage.

On the other hand it is extremely desirable that along with the routine of strict intellectual drill and practical work, our school life should have threads of vital connection with the general life of the community—threads numerous enough and strong enough to make the training of school have the most direct bearing upon that which is the supreme object of all training—the wise and useful conduct of life.

There are some subjects, again, as every teacher knows, which, though not furnishing a basis for severe mental training, are yet of immense value from the interest they evoke and the stimulus they give to the ambitions and energies of the pupil. They need not make large demands upon the teacher's time, and may even be taught in an incidental way, yet the influence on the general intellectual life may be permanent and great.

I have a conviction that the subject of which I am to speak to you now is one which could be made to combine, in an exceptional way, the advantage of giving school work a direct bearing on the general life and interests of the community, with the further advantage of furnishing a powerful stimulus to the minds of the young.

The thought which I have in my mind is wider than is indicated by the subject as named in our agenda paper.

My object is to show that by such teaching as I propose we have in our hands a means better than any other for developing a more intelligent citizenship and a more intelligent patriotism in the generations which pass through our hands. This means a power to exercise a profound influence on the inner springs of national life. Such a purpose lifts a discussion of this kind out of the routine of school methods into something approaching the importance of statesmanship. We teachers need to feel constantly that the essential statesmanship of the country ought to receive a decisive impulse from the schoolroom.

Civilized society has surrounded itself with an atmosphere of law and order; an atmosphere not unfavorable to the assertion of personal freedom of thought and action, yet in which we must all submit to constant direction, restriction, and, if need be, coercion. One of the most important objects of life, one of the highest aims of all home or school training, is to fit us to take our right place in this environment with a just understanding of its conditions. Direct teaching in regard to the nature of these conditions seems to me the natural and logical sequence of any system of free state education.

The state provides for free education because it wishes that all men should be good citizens, and believes that, on the whole, the intelligence which education gives tends to good citizenship. But is this general intelligence sufficient for the end aimed at?

Two facts must be borne in mind. As civilization advances, and society becomes more complex, the duties of citizenship tend to become more complex also.

Again, the growth of democracy, steady and irresistible, makes public duties fall over a much wider range of society. Every citizen of a free state may, at any time, be called upon to perform duties involving great responsibilities towards the whole community. Large masses of society must be prepared to perform civil functions more or less complex. It seems to me that general intelligence alone is not sufficient to meet these essentials in a modern state, but that special training in the duties of citizenship is required. The citizen of a free country should have an intelligent acquaintance with the institutions under which he lives, and the operations of which he, in part, influences. He should know clearly his own rights and privileges as an individual, as well as the point where individual freedom of action must yield to the general good. He should understand in a general way how laws are made, and the extent of his own responsibility in regard to their character. He should know how lawful authorities are constituted, why they should be obeyed, and the limits of their right to govern. He should know the purposes for which public revenues are required, and how they are collected and expended. Without completing this category of knowledge necessary for intelligent citizenship, let us say that above all he should feel a profound sense of responsibility in the performance of those public functions which fall upon every citizen, —seeing that the value and permanence of our democratic institutions depend largely upon the degree in which the individual citizen is prepared to make private ends secondary to the public good.

Admitting that all the surroundings of life tend to prepare a man in some degree for the performance of public duties, still it will be agreed that to give the mental and moral equipment useful for the full range of citizenship thus roughly outlined, special and direct training is required. The dominance on questions of public policy given to private citizens through the ballot box involves the absolute need of trained intelligence on public questions. The safety of the state requires it. The true policy of the state will be to give it, and this it can best do through the medium of the schools.

I pass next to the utility of this kind of teaching in developing patriotism.

Patriotism in all ages has by universal consent been looked upon as a virtue—a thing good in itself. Ultimately it is the backbone of national strength. Even an undiscriminating and unreasoning patriotism is an enormous strength to nations. Witness the tremendous force it has at times given to a Russia or Turkey—despot-ridden though they are. How much more efficient should be a justified and reasonable patriotism! We believe that in our institutions, our methods of government, our securities for individual freedom, we have the firmest basis of any people in the world on which to build an intelligent and discriminating patriotism. We cannot afford to despise this source of national strength or neglect its cultivation. In spite of many cosmopolitan tendencies, nations still have to fight for their own lands. Free popular governments, above all others, require the support of a patriotism at once intense and intelligent. Not second, even, to the glorious records of our nation as a military and naval power, in developing such a patriotism, will be the study of our political system—the processes by which it grew—the principles on which it is based—the privileges which it gives—the duty which it imposes. Clear and defined ideas in the popular mind on these points are our greatest hope for further development in worthy lines of national life.

When that greatest of public teachers, the press, sometimes shows itself liable to forget the spirit of patriotism in the passion of party, it is right that we should seek a correction in the direct teaching of our schools.

The natural place for giving teaching on civil government seems to be side by side with history, since in history we find the gradual evolution of our institutions. To do it effectively, however, I think that we require a special text-book. The Board of Education for the Province of Ontario has added to its authorized English and Canadian History a chapter entitled "How we are Governed," which briefly outlines our system of government, and suggests to teachers that what is there given should be largely supplemented by oral instruction. It is well to find even this recognition for the subject, but the question is too large and important to be adequately dealt with in the limits of a chapter.

Last year a book called the "Citizen's Reader" was published in England by Mr. Arnold Forster to meet this particular want in English schools. The fact that it has run through seven or eight editions within a year proves that it met a great popular demand. I would strongly recommend this work to the attention of teachers interested in the subject, as a hand-book to assist them in giving oral instruction in the absence of an authorized text-book. It is written largely from an English standpoint, and is therefore not in all respects what we need for instruction here, since the institutions which we inherit from the mother land are greatly modified in their operations among us; more so, I think, than an English writer would suppose. But Mr. Arnold Forster sketches the main conditions of British citizenship in a singularly clear and vigorous way, and in a style admirably calculated to interest children. The book is being re-written for use in Australian schools, and the author has consulted me as to the advisability of preparing it in the same way for use in Canada. I have pointed out to him that the plan pursued in almost all the Canadian provinces is to use only authorized text-books, and that the success of such a work depends largely upon whether it were adopted or recommended by our Boards of Education.

But when once the importance of the subject is recognized, the question of a text-book, either in connection with our history or as an independent work, will soon be solved. Meanwhile teachers will find that even incidental instruction in the direction indicated will well repay them by the stimulus it gives to the minds of their pupils. From well-directed discussions about public duties and private rights; the structure of the state and the part they are to take in it; about law and justice; and, in short, "all the framework of the land," they will return with renewed spirit to those other studies and methods of training by which we strive to make them useful and worthy citizens of a great state.

SCHOOL AND COLLEGE.

The Victoria School of Art and Design at Halifax, has been opened with full classes.

The Presbyterian Ladies' College of Halifax, will move into its new quarters after the new year.

The "Dramatic Club" of King's College, N. S., advertises an entertainment towards the end of the month.

The Y. M. C. A. of Halifax, gave a grand entertainment to the students of Dalhousie College in November.

The Model School, Truro, has been changed into the Colchester County Academy. Wm. R. Campbell, B. A., a Pictovian, and Munro Bursar of Dalhousie, is its first Principal.

A young colored woman, Miss Howells, outstripped all her competitors in the recent County Academy examinations at Halifax. Her average was 93, a figure not reached by any other candidate for admission.

The football team of Dalhousie College has been making a tour of a portion of the provinces. Last month they played the Acadia College team, the Ahegweits of Prince Edward Island, the Pictou and New Glasgow teams of Nova Scotia.

The *Acadia Athenæum* makes honorable mention of the following schools supplying freshmen for the College. S. C. Shaffner at Paradise, J. R. Ruggles of Lockeport, J. F. Godfrey at Hebron, and last but but not least, L. D. Robinson of Berwick.

The *Dalhousie Gazette* mentions the following Dalhousians as teachers in Nova Scotian academies and high schools:

Principal MacKittrick, Sydney Academy; Principal Creighton, North Sydney Academy; Principal Fraser, Baddeck Academy; Principal Coops, Port Hood Academy; Principal MacKay, Messrs. Fraser, Gammell and Mellish, Pictou Academy; Principal E. MacKay and Mr. McKenzie, New Glasgow High School; Principal Campbell, Truro Academy; Principal Jones, Digby Academy; Principal Stewart, Shelburne Academy; Principal Mackintosh, Lunenburg Academy; Principal McLeod, Kentville Academy; Mr. Morton, Yarmouth Academy; Miss Forbes, B. A., Principal Great Village Schools; Miss Newcombe, B. A., Presbyterian Ladies' College, Halifax; Principal Laird, High School, River John, Pictou.

At the opening of the N. S. Normal School, Principal Calkin, in introducing the speaker of the day, stated that the number of grade B teachers enrolled this year was four, that forty-five held grade C license, and that about two-thirds have had more or less experience as teachers. A most gratifying showing was this, an indication that the school is assuming more and more a distinctly professional character. In his address, Dr. Allison stated that in the recent examination for teachers, of 175 candidates for first class licenses, only 55 succeeded; of 750 applicants for second class licenses, 250 succeeded. This would indicate that the way into the profession of teaching in Nova Scotia was very difficult; and yet as a matter of fact it is easier than in any other province of the Dominion. The representation by counties is as follows: Colchester 50; Cumberland 16; Pictou, Halifax and Hants, 12 each; Annapolis 8; Lunenburg, Kings, Antigonish and Digby, 7 each; Queens 4; Guysboro 4; Shelburne 2; Cape Breton 1.—*Ex.*

The Truro Kindergarten was opened on Monday, November 28th. Twenty-nine bright children presented themselves, in smiling wonder, to enter upon a new existence. No one could watch Miss Woodcock, their director, manage so very many little children, keeping them happy and good from the start, without feeling that the "committee" have secured a lady who thoroughly understands her art, and is herself, with her refinement and evident reserve force, an excellent exponent of Frœbel's beautiful system. The apartment is large, home-like and inviting, with its gay furniture and plants. Its location in the Normal school building will render it a power for good in showing teachers that discipline may be secured by love and tenderness without any sacrifice of efficiency. The pretty little tables and chairs are furnished by Selby & Co., Toronto, Ontario, and the rest of the material, "Gifts and Occupations," have been supplied by the same firm, the senior member of which, Mr. Wm. Selby, a great enthusiast in regard to the kindergarten system, has generously made the committee a discount of $50 on the invoice as a present from himself to encourage the establishment of kindergartens in Nova Scotia. Miss Woodcock will be assisted by two ladies, experienced and well-educated.—*Condensed from Colchester Sun.*

Truro Kindergarten entered upon its second week with thirty scholars, who were all delighted with their director, Miss Woodcock. The general impression is that the kindergarten will amply fulfil the promises made by its promoters.

PERSONAL NOTES.

President Brock, of King's College, is making a short lecturing tour in the United States this month.

Some of our exchanges refer to John J. Power, Principal of the Arichat Academy, as the youngest County Academy headmaster in Nova Scotia. He is a Pictovian.

Dr. J. F. Avery, one of the governors of Dalhousie University, died recently, bequeathing $500 for prizes for that University.

D. M. McIntosh, A. B., late of the Superior School, Bathurst Village, is at present attending the College of Physicians and Surgeons, Baltimore. Mr. McIntosh was presented with a flattering testimonial on leaving Bathurst a few weeks ago. Mr. McIntosh expects to receive his degree of M. D. next spring, having before attended the institution at Baltimore.

SCIENTIFIC NOTES.

Analysis of beers in the laboratory of the Pictou Academy last month, gave 0·3 per cent. of alcohol in one specimen of brisk home-made beer; but from eight to ten per cent. in some beers retailed as temperance drinks. These latter were properly seized by the officers.

Beet sugar manufacture is reaching great perfection and immense proportions in Germany. Very nearly twelve per cent. of the weight of the beets is obtained as sugar, and the cost of the sugar is only *two cents* per pound. These are the facts reported from no less than sixty-four first-class factories. Can not Prince Edward Island, New Brunswick and Nova Scotia produce as good a sugar beet as Germany? The beet might not be raised so cheaply on account of the higher wages of labor; but it is evident that under the management of skilled directors, the beet sugar might become an important Canadian industry. This is a good subject for an object lesson to young Canada.

From an article in the *Halifax Critic* we learn that the capital invested in Nova Scotian gold mining produces a greater return than that invested in the much-boomed gold fields of South Africa.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers

Questions and Answers.

E. S. M. K.—What are the text-books used in the Nova Scotia Summer School of Science?

The course of study with text-books for next year has not yet been officially announced. It is not expected that there will be any material change made in text-books recommended. We shall announce any information received as soon as possible.

SEVERAL.—Where can "Seret's Volapuk" be had, and do you consider it the best?

See criticism in this number of the REVIEW.

F. M.—Is there any foundation for supposing the Star of Bethlehem to be seen this year?

See article, "Among the Constellations," in this number of the REVIEW.

E. G. B.—Would you please answer questions 6, 8, 9 and 13 in the "Useful Knowledge" paper given at last County Academy entrance examination in Nova Scotia? Would like to see all of them answered.

We expect to open a column with notes for oral lessons on Useful Knowledge, and may in this way answer your questions. We shall not lose sight of the matter.

SUBSCRIBER.—What time does the present term in New Brunswick schools close—on the 16th or 23rd inst.?

On the latter date, the work of the new term beginning on the 9th of January, 1888.

F. H. E.—Several of the students of the School of Science became very much interested in the familiar little experiment of covering a tumbler of water with a piece of paper and inverting. It was found, of course, that the presence of the paper was sufficient to prevent the water from falling out. Further, it seemed to make no difference with the result whether the tumbler was completely or only partly filled; but where a glass plate was substituted for the paper the water fell out immediately, except where the tumbler was completely filled. Was the difference observed due to carelessness in making the experiment? or was it what should have been expected? and if so, how can it be accounted for? A good deal of animated discussion was held over the matter at the time, and a month or two later one of the students told me the question was "haunting" her yet. Perhaps some of the readers of the REVIEW who are not physicists would like to crack the nut, and with your permission, Mr. Editor, I toss it to them.

BOOKS AND EXCHANGES.

EXPOSITION OF THE KINDERGARTEN SYSTEM is an admirable little brochure published by Selby and Co., Toronto, price 25 cents. It is well printed and contains illustrations describing the methods of the system with songs used. It contains a portrait of Frœbel. The excellence of its reading matter and the taste displayed in getting it up, make it a valuable addition to kindergarten literature, in which, we are glad to say, a very general interest is being aroused in Canada.

HOW TO TEACH VOCAL MUSIC. This is an excellent guide for those who would, with little knowledge of music, teach pupils to read and sing ordinary music. The author has used careful discrimination in selecting what is best from various systems, and has presented these points clearly and intelligently. Price, paper, 50 cents; cloth, 75 cents. Published by Fowler and Wells, 775 Broadway, New York.

WEBSTER'S UNABRIDGED, as recently revised and improved, delights as well as instructs. It is as useful at the fireside in every intelligent family as it is in the school. One can scarcely realize what an educative force a work of this kind may become during the long winter evenings, either in the family circle or the reading circle. Many leading educationists of Canada have given it their approval:

"An important feature of the present edition is the large amount of scientific and general information which it contains, rendering it in some sense an encyclopedia of knowledge rather than a mere dictionary of words."—*Sir Wm. Dawson.*

"Webster's Unabridged Dictionary is, in my opinion, unequalled by any work in the field of lexicography. I would like to see Boards of School Trustees place a copy of it in at least every Grammar and Superior School in the Province.—*Wm. Crocket, M.A., Chief Superintendent of Education for N. B.*

"Webster, in its present form, holds an easy pre-eminence. I may add that it has been the standard of appeal in the Provincial Normal School, Truro, N. S., since the establishment of the institution about thirty years ago."—*J. B. Calkin, M. A., Principal N. S. Normal School.*

Recitations for Christmas. Published by Charles A. Bates, Indianapolis. Price 25 cents. This contains many appropriate Christmas pieces, both in poetry and prose.

A New Part-Song and Chorus Book. For high schools, academies, choral societies and families, by Charles E. Whiting, formerly teacher of music in the Boston public schools. D. C. Heath & Company, Boston, 1887. It consists of six departments, namely: condensed elementary course; vocal exercises; two, three, and four-part solfeggios; three and four-part songs; anthems and choruses; and hymn tunes. Our readers can form an idea of its size when we say it is about eight by ten inches, with 256 pages. From the reputation of its author and the publishers, our readers must conclude that the work must be one of the best of its kind. An examination of the work will not fail to convince the sceptical.

Fresh Water Sponges. A monograph by Edward Potts, member of the Academy of Natural Sciences, Philadelphia. This is a synopsis of all the forms of American fresh water sponges known, with descriptions of those named by other authors throughout the world. It is the latest and most complete presentation of this department of zoology in existence, and reflects much credit on the author who has distinguished himself by a contribution to science of lasting value. It contains a series of plates illustrating general and specific structure. These representations have been superbly and accurately executed.

The Citizen's Reader. By H. O. Arnold Forster, with an introduction by Hon. W. E. Forster. This book, referred to in Mr. Parkin's paper on "Teaching the Principles of Civil Government," is published by Cassell & Co., of London and New York, and can be ordered through any bookseller. The English price is only one and sixpence. Of it the English *Journal of Education* says: "We have no hesitation in pronouncing Messrs. Cassell's 'Citizen's Reader' the most important contribution to the literature of elementary education that has appeared in the last decade." This is high praise, but the very large sale which the book has had seems to prove that the popular verdict ratifies the critical opinion. Any boy in the British empire would be the better citizen for reading this volume, and we trust it will find its way into many Canadian homes. In style it is as far as possible removed from the dryness of the ordinary text-book, and the volume will be found interesting reading for grown up people as well as for the young.

Naturalists' Leisure Hour and Monthly Bulletin. Published by A. E. Foote, 1223 Belmont Avenue, Philadelphia, Pa., U. S. A. 75 cents a year. Contains lists classified of the largest American collection of books and works in every department of science. Mr. Foote has also one of the largest mineralogical collections of any individual.

The Conchologists' Exchange. Are you interested in the collection of shells? then get this exchange Monthly; only 50 cents a year. Published by Wm. D. Averell, Chestnut Hill, Philadelphia, Pa., U. S. A.... *The Illustrated London News.* It is, perhaps not generally known that this enterprising and magnificent weekly, printed in America from London advance plates, is now, under this arrangement, obtained at considerably reduced rates. The Christmas number has been received. Its illustrations are elegant and beautiful and in the highest style of art.... *The Acadia Athenæum*, the organ of the students of Acadia College, is one of the finest looking of our college exchanges....The *Fordham Monthly* issues a magnificent annual number.... The *Dalhousie Gazette* means business. It is published fortnightly, and never looked better. It points out that nearly twenty of its graduates and alumni are in the academies and high schools of Nova Scotia..... *The Swiss Cross* for December is an admirable number. It gives evidence of a desire to meet the wants of its numerous readers. As a magazine for furnishing delightful instruction in natural history it has no equal. We are glad to hear of its success. The lesson on ferns, by Prof. W. W. Bailey, in the current number, is well fitted to create an interest in an interesting subject.... The *Century* for December contains a fine portrait of Lincoln. The illustrated "Notes on Parisian Newspapers" is a graphic sketch of Bohemian life in the great metropolis. The *Century* gives promise of unusual excellence for the coming year. See advertisement in another column.... *Science* for December devotes its leading article to a discussion of manual training in New York schools, showing the advance of public opinion on this question during the past year. This scientific periodical is doing much in behalf of practical education....The *Popular Science Monthly* for December has an interesting and varied table of contents in which is an article by Grant Allen on American Potentillas, a genus of plants well known and widely diffused throughout the Atlantic Provinces. Mr. Allen frequently refers in the article to observations made during his recent visit to Canada.....The Christmas number of *St. Nicholas* is well fitted to inspire a keen and lively relish for approaching festivities. It is an admirable number. No more appropriate Christmas present for a boy or girl could be devised than a year's subscription to *St. Nicholas.* Refer to the advertisement in another column for the attractions it promises next year, and it will keep its promises.... *L'Evangeline*, a new weekly French paper published at Digby, N. S., has come to hand. It makes a very creditable *debut*, and has commenced a series of articles on education.

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WITH the November, 1887, issue THE CENTURY commences its thirty-fifth volume with a regular circulation of almost 250,000. The War Papers and the Life of Lincoln increased its monthly edition by 100,000. The latter history, having recounted the events of Lincoln's early years, and given the necessary survey of the political condition of the country, reaches a new period, with which his secretaries were most intimately acquainted. Under the caption

Lincoln in the War,

the writers now enter on the more important part of the narrative, viz: the early years of the War and President Lincoln's part therein.

Supplementary War Papers,

following the "battle series" by distinguished generals, will describe interesting features of army life, tunneling from Libby Prison, narratives of personal adventure, etc. General Sherman will write on "The Grand Strategy of the War."

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A Novel by Eggleston

with illustrations will run through the year. Shorter novels will follow by Cable and Stockton. Shorter fictions will appear every month.

Miscellaneous Features

will comprise several illustrated articles on Ireland, by Charles De Kay, papers touching the field of the Sunday-school Lessons, illustrated by E. L. Wilson; wild Western life, by Theodore Roosevelt; the English Cathedrals, by Mrs van Rensselaer, with illustrations by Pennell; Dr. Buckley's valuable papers on Dreams, Spiritualism, and Clairvoyance; essays in criticism, art, travel, and biography; poems, cartoons, etc.

By a special offer the numbers for the past year (containing the Lincoln history) may be secured with the year's subscription from November, 1887, twenty-four issues in all, for $6.00, or, with the last year's numbers handsomely bound, $7.50.

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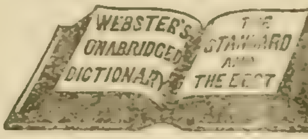

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G. U. HAY, Ph. B.,
Editor for New Brunswick.

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EDITORIAL NOTES.

IN HIS hints to the teachers of his district, Inspector Lay of Amherst, says: Resolve to subscribe for the "EDUCATIONAL REVIEW" for 1888.

THE Cleveland (Ohio) Board of Education is considering the question of pensioning teachers who have been in the schools for twenty consecutive years.

WE have received late circulars from Professor Ward's "Natural Science Establishment" at Rochester, New York. Pictou Academy has procured a very finely mounted human skeleton from this mammoth establishment.

THE Teachers' Association of District No. 10, Nova Scotia, endorsed the EDUCATIONAL REVIEW by a most hearty, unanimous vote. At the present rate every teacher in the counties of Cumberland and Colchester will soon be supporters of the REVIEW. We hope to be able to make it still more useful and satisfactory to our patrons.

THERE is an excellent prospect for the New Brunswick Summer School of Science for this year. The executive committee of the Educational Institute extended a cordial support to the proposal at its recent meeting, and appointed a committee to make the necessary arrangements for carrying on the school. The names of the committee are: G. U. Hay, W. J. Wilson, H. C. Creed, Philip Cox, John Brittain. Notice will be given in an early number of the REVIEW of the time and place of meeting, the programme, and names of instructors.

TEACHERS of Grammar and Superior Schools throughout New Brunswick, will be interested in knowing that the Board of Education has authorized the adoption of the courses of study published in the October and November numbers of the REVIEW, until the close of the present term, or until such time as a course of instruction shall be prescribed. The Executive Committee of the Educational Institute appointed Inspector Oakes, G. R. Parkin, M. A., Philip Cox, M. A., W. B. Jonah and S. D. Alexander a committee to revise these courses for final adoption by the Board of Education.

THE desire for more systematic instruction in Natural Science in New Brunswick is becoming daily more and more marked. The Summer School will soon become a permanent organization; Dr. Bailey's book on Natural Science is stimulating teachers to read and observe the book of nature; and the band of teachers in St. John who are devoting their time this winter to the special study of natural history, are evidences of this desire. But if a wider and more lasting stimulus is to be given to this study, the Normal School must foster it. To begin: Our Normal School is not provided with a museum worthy of the name. In geology there is no adequate collection; in mineralogy there is a small but good collection; in botany the collection is in sad need of arrangement; in zoology there is nothing. Now a little united effort among the teachers of the Province, and especially among the students of our Summer School, would soon change this state of things.

A Teacher has found the following plan in teaching chemistry to work well: In conducting the experiment (no teaching is effective in chemistry without careful experiment) let the class prepare the apparatus and assist as far as possible; let them write out for the following week an account of the experiment, the tests, results, etc., being careful to exact from the pupils only what came under their own observation. By this plan chemistry may be taught thoroughly, and a stimulus is thereby given to composition by providing a subject on which pupils will be eager to express themselves, and they will do it with a little practice in excellent language. If the plan here outlined were made more general, and other studies made to do duty as subjects for composition, writing and spelling exercises, we would have fewer complaints of "too many studies."

M. Inspector Boudreau, acting under the direction of Chief Superintendent Crocket, has addressed a circular letter to his French co-laborers, calling upon them to avail themselves to a greater extent of the advantages prescribed by the New Brunswick Normal School, The call is an opportune one. The advantages presented to the French student in the department so efficiently presided over by M. Belliveau at Fredericton, should be used to a greater extent than they are at present. The example presented by a people, who, under great difficulties, are aiming to preserve and encourage the study of their mother tongue, is worthy of admiration. Such journals as the *Moniteur Acadien, Le Courrier des Provinces Maritimes, L'Evangeline,* are worthy exponents of the spirit that seeks to preserve the French language and advance education throughout these Provinces.

"How do you like 'Among the Constellations?'" we asked a reader the other day. "I haven't read the articles, I don't know anything about astronomy. But I must. What book would you recommend?" Now, reader, if you don't know anything about the stars or astronomy, read the articles. They are written just for those people. If you *do* know anything about the subject, *don't* read them. Save your time. You can begin with any of them. It is not astronomy; it is more elementary—simply uranography, the geography of the heavens, and only elementary at that. Even when there is a mathematical disquisition, we never intend to wander beyond the elementary mathematics of grade B or C. It will take but a few minutes each month to compare our notes with the sky. In the course of a year or two, without any text-book, the leading features of the starry firmament may in this way become as familiar as the outlines of terrestrial geography. And you will have your reward in a new and ever present source of interest opened up for enjoyment.

It is proposed to wind up the affairs of the St. John Mechanics' Institute, and sell the building with library and museum. It is hinted that the Board of School Trustees may become owners of the property, the price being a nominal one. If so, there would be available for school purposes—an assembly hall capable of seating over a thousand persons, offices for the Board of Trustees, several school-rooms, a library that has in it works that would form the nucleus of a valuable educational library, a museum which might be used for school purposes or be handed over to the N. B. Natural History Society to form a provincial museum.

The Institute has been in existence fifty years. The design of of its founders was to encourage technical and industrial education. That was lost sight of long ago. To use the property for educational purposes at the beginning of the second half of the century seems to be reverting to the original design; and if education of a technical and scientific character could receive encouragement within its walls, so much the better.

We have had the pleasure of looking at a note book, of one of the readers of the Review, in which ink sketches of the insects figured in the lessons of Ferndale School were made, accompanied with short descriptive notes. This young lady had never received instruction in drawing, but the simple and direct attempt to copy these forms developed a remarkable degree of accuracy in the sketches, while it also left so vivid a picture in the mind as to enable her to identify the natural objects without hesitation. We have also observed the barest outlines of some of these figures on the blackboard create a wonderful interest in the subject of drawing. Only a few lines of chalk, and from the black surface there rises in apparent relief, a winged butterfly. We strongly recommend every teacher, whether he has received instruction in drawing or not, to follow this course. Sketch in outline every figure in the Review as it comes out. At the end of a year or two, you will then be surprised to find that you can, with no greater difficulty, make a fair outline sketch of a new object from nature. And in the meantime a great many facts of form will be pleasantly assimilated with but little consciousness of effort. Never mind the shading lines. Reproduce outlines, and outlines only. When this can be done truly, you are an artist.

SUBJECTS OF STUDY.

The letter of "X." in the December REVIEW has, we hope, been carefully read. It was the plea of a practical teacher who sees, in the multitude of subjects required to be taught in our schools, a source of educational weakness.

Our school courses, it is claimed, are weighted down with subjects, and others are knocking at the door for admission. While some few pupils in each school may be able to acquire a pretty complete knowledge of the subjects of these courses, the great majority of pupils fail in the attempt, give up the contest, and relapse into carelessness and indifference, while the worry and discouragement incident to the attempt to "get up everything in the course," paralyze the energies of both teacher and pupil. It is of paramount importance to education to enquire how far the complaints of our correspondent "X." and others are true.

Have we too many subjects on our school courses? or do examiners and teachers make the mistake of expecting every subject laid down in a course to be taught with too great fulness, instead of having its principles and salient features carefully discriminated and intelligently taught? In answer to the first,—there is no doubt that the tendency is to crowd too many subjects in a course of study. Over zealous persons, estimating too often the importance of a subject from their own standpoint, think that the intellectual pyramid would be complete if only that particular subject should be introduced into the curriculum, and forthwith they devote their energies to that object, too often with success. There are many such subjects that might be taught incidentally, or in connection with other lessons.

In regard to the second point. The State pays for and has a right to expect a sound and thorough training, in the elementary schools, in the three R's. No smattering of a dozen or a score of subjects can make up for the want of this training, either as a mental equipment for everyday life or as a preliminary step to higher intellectual flights. The wise teacher will discriminate, not only in an overloaded curriculum, but in each subject of it, and teach its leading features thoroughly, and incidentally what is of less importance. But how, we hear some asking, can teachers do this when the examiner requires the course, the whole course, and nothing but the course, with all the bearings of each subject thereof? With the possession of good sense and a nice judgment an examiner will not fall into such an error. But for fear that every examiner who reads this may complacently suppose that these qualities belong, in an especial degree to him, it may be said that quite another species of examiner is "abroad;" and a strong protest should be entered against the absurd and meaningless questions that are too often put forth as tests (?) of pupils' efficiency both in the elementary and higher grades, by examiners who appear to think that it is their special function to puzzle and confuse the pupil, and who appear to have forgotten that they themselves once climbed the difficult path of knowledge. Our correspondent "X." very properly placed a great deal of the responsibility of the superficial work done in our schools upon the shoulders of these examiners.

There are other points in the letter of our correspondent (whom we would be glad to hear from again, and designate by a "known quantity") which we would like to touch upon, and which we may refer to in a future issue.

CANADIAN TEA.

The Halifax *Chronicle*, last month, editorially referred to the interest manifested at present in the Labrador tea plant. Mr. James Taylor, of Winnipeg, brought the matter before the Schultz Committee at Ottawa, and not only the committee, but the public, appear to be impressed with the idea that the subject may possibly be of industrial importance. The editorial remarks drew out correspondence which showed that the plant is common in Nova Scotia and New Brunswick. Mr. J. J. Fox, of Halifax, who has seen it used in the Magdalen Islands, and has tried it himself, describes it as "astringent and possessing a narcotic, soothing and exhilarating quality. The infusion has an agreeable aromatic and somewhat astringent taste, its flavor being improved by boiling in milk, and after a few days' use is found to be quite palatable. Formerly these plants were secretly used by fraudulent brewers in the north of Europe, to give headiness to beer. Having used the Labrador tea as a beverage for some months, I can recommend it to those desirous of testing its qualities, and am confident that after using it for a short time its flavor will be found very agreeable and more conducive to health than the common and often adulterated Chinese tea imported for sale."

A writer from Baddeck says: "Cape Breton alone grows enough of this tea to 'supply the whole Dominion with a delightful beverage at a very moderate figure." It was generally used by the Micmac Indians and the earlier settlers in this island.

The *Colchester Sun* says: "This plant is found almost everywhere in our forests, and when the leaves are properly steeped it makes a liquid, which, with sugar and milk in proper proportions, has a flavor that cannot be described, and which, when once tasted, will never be sought for again."

This latter is a valuable remark, as it emphasizes the danger of coming to a conclusion from simply "once tasting." Imagine the gustatory properties of half a pound of China tea cooked like a vegetable in a sauce-pan, a real historical experience in Nova Scotia on its first introduction in at least one settlement—and the soundness of the verdict on its desirability as a beverage from such a crude experiment!

An intelligent series of experiments should be made with the infusions. And more than that. Experiments should be made on the best time for collecting the leaves, and on their manipulation and treatment to develop desirable qualities.

There are three species of this plant—*Ledum*—in Canada. There is the "glandular Ledum" *(Ledum glandulosum,* Nutt.) of the Rocky Mountains and Southern British Columbia. The "marsh Ledum," *(Ledum palustre,* Linn.) which is the narrow leaved and arctic form, common also to the north of Europe and Asia. And the "broad leaved Ledum," *(Ledum latifolium,* Ait.) the Labrador tea proper. It belongs to the Heath Family, the *Ericaceæ,* and is a low shrub, with oblong leaves, their edges rolled back, and their lower surface covered with a fine, dense, rusty colored wool. The flowers are white, in terminal umbel like clusters. The foliage, when bruised, has a fragrant odor. The surest distinction between *L. latifolium* and the narrow leaved *L. palustre,* is that the latter has uniformly ten stamens and oval pods, while the former has commonly five stamens (never ten) and oblong pods.

Infusions of *L. palustre* are stated in the United States dispensatory to be considered as efficaceous in a number of cutaneous affections. *L. latifolium* is considered to be pectoral and tonic. The indications are that Labrador tea may tend to beautify the skin, strengthen the lungs, and invigorate the assimilative functions. It is said that during the American war of independence, Labrador tea was used to some extent in the United States. If they continued emptying all the foreign teas into their harbors as the Bostonians commenced, the Americans to-day might be a better looking and stronger people. Perhaps so, perhaps not.

However, when the probability of securing a more healthy general beverage, and at the same time, developing a new industry within our country, is indicated, both science and patriotism suggest a patient and complete investigation of the facts. Our teachers can do their share by giving an *object* lesson of fifteen or twenty minutes on the plant in every locality in which it may be found. We have had good specimens of it from various quarters of the country for identification during the past two or three weeks. A hunt for the Labrador tea plant in January will be as good an athletic exercise for the boys as "Hare and Hounds," and probably just as interesting for the first occasion. The scientific editor will always be glad to get and store up well authenticated facts and experiments in this connection.

A WORK ON ECHINODERMS.

We are glad to announce that W. F. Ganong, A.B., has in course of preparation a work on the Echinoderms (star-fishes) of our coast. Mr. Ganong, in addition to a practical study and observation of these forms along our coast, extending over several years, has made a special study of them in connection with his zoological course at Cambridge. The work is especially designed for students and teachers. The subject will be treated under the following heads:

1st, An analytical key which will enable any one to identify an Echinoderm of our coast; 2nd, A brief description of each, together with an account of its habits of life, habitat, etc.; 3rd, A cut to illustrate each of the genera; 4th, A brief account of its life history so far as known; 5th, A list of known localities, (*a*) showing its distribution on the surface of the globe, (*b*) of places in New Brunswick where it is found, in order that students may have their interest aroused by adding new localities. These are some of the prominent points which Mr. Ganong will take up. In addition to these there will be found in the work simple experiments to interest classes, which will be illustrated; how and where to collect, and how to prepare specimens for class work, with interesting particulars of their habits and surroundings.

Our teachers and students, especially those of our summer schools, will be glad to know that Mr. Ganong has this work in view. It will be published in a cheap and neat form, and may serve as a manual to zoologists, not only of New Brunswick, but also of the other Maritime Provinces, and Maine. Mr. Ganong's growing reputation as a naturalist, and the happy faculty he has of making every subject clear and interesting to those who come within range of his teaching, will cause this little book to be looked forward to with interest.

This, we understand, is to be the first number of a series of monographs on New Brunswick zoology, which will be looked forward to with interest by students.

SCHOOL SAVINGS' BANKS.

This old-world institution has been introduced into the public schools of Dartmouth, Nova Scotia. The Town Council has authorized a neat little "pass book" for each depositor, containing the "Rules of the Dartmouth School Bank," and the history of and reasons for the trial of the system. Principal Congdon, who, we presume, is more than any other man responsible for the experiment, says: "So far it has worked admirably. We have about 450 depositors. Took in $50.22 first week; and last Monday (12th Dec.,) although our schools were very thin on account of the wet weather, we took in $43.78. I think the whole scheme good. Our teachers do the work, which is not heavy, after hours, and are very much interested in it. We find it has produced good results so far." Our readers, will, no doubt, be interested in the result of this trial; and we think we can do nothing better than publish the admirable statement of the Dartmouth school committee, and the rules of the bank in our next number. We shall then be ready to learn the measure of success attending the enterprising experiment, and to estimate its value for other sections.

INTER-PROVINCIAL CONVENTION.

The educational associations of Nova Scotia, New Brunswick and P. E. Island have all declared for an Inter-provincial conference of educationists, to be held in St. John, in the third week of July next. In New Brunswick no Provincial educational institute will be held this year. We have not heard what action has been taken, if any, in regard to a meeting of the associations of Nova Scotia and P. E. Island for the present year, but it is probable that the general convention will take the place of a provincial association.

A convention of the teachers of these Provinces will be looked forward to with the greatest interest. If nothing more be accomplished than to make those engaged in educational work better acquainted with each other—the REVIEW has already broken the ice—the results will be important. But there are questions that are common to the educationists of these Provinces—problems pertaining to the future of our schools—that should be discussed by the best minds engaged in the work.

The committee engaged in making the final arrangements will, it is hoped, leave nothing undone to make the meeting successful. At a meeting of the Nova Scotian Association executive committee, on the 4th inst., Prof. F. H. Eaton of the Normal School was appointed, on behalf of that body, to make full and final arrangements. Principal Mullin, G. U. Hay, and Inspector Oakes were appointed by the executive committee of the New Brunswick Institute, while Supt. Montgomery and Principal Anderson are the committee of the P. E. Island Association. A meeting of the joint committee will take place at an early day.

SPELLING REFORM.

The Dalhousie College *Gazette* is leading in the spelling reform movement by reporting the proceedings of the "Sodales" Society according to the twenty-four rules of the American and English Philological Associations. They have the highest authority of scholarship in the English world in their favor. But then we must remember that the greatest English and American philologists couldn't take a Grade B diploma in Nova Scotia if they followed their own recommendations. Keep on, however, *Gazette*. The water must rise before the dam gives way. The stream of progress never runs free.

The *Academy*, Vol. III., No. 1 (December), takes ground in favor of phonetic reform in spelling and phonographic reform in writing.

The *University Monthly*, of the University of New Brunswick, looks approvingly in the direction of reform.

The author of the "Hand-book of Volapuk," just published in New York, London and Chicago, says in his preface: "Upon the recommendation of the American Philological Association and of the London Philological Society, I have dropped the final *e*, misleading and unhistorical, from such words as 'infinitiv,' feminin,' etc.'

TEACHERS' ASSOCIATION.

The district association of teachers in Mr. Lay's inspectorate, Nova Scotia, held their annual meeting at Amherst on the 22nd and 23rd December. About seventy teachers, representing every part of the district, were present.

The work of the first day commenced at 10 A. M., by an address from Inspector Lay. Then followed a paper by Mr. J. W. H. King, on the "Utility of Science;" by Principal Freeman, of the Amherst Academy, on the "Responsibility of the Teacher;" a primary school lesson, by Miss McGregor, of the Amherst Academy; a lesson on division, by Miss Byers, of New Annan; and an instructive paper by Principal Calkin, of the Normal School, advancing several practical suggestions on school work.

In the evening Mr. and Mrs. Lay entertained the Association.

The second day's work consisted of some routine business and the following exercises: A lesson on "Dew," by Miss Travis; on the "Tonic-Sol-Fa" system, by Mr. Byers, of Tatamagouche; and a paper, "Progress, the Teacher's Watchword," by Mr. Ruggles, of Acadia Mines. Mr. Tuttle, of Wallace; Mr. McKenna and Miss Bell also took part in the exercises. The Association was one of the most profitable ever held, and the teachers are quite enthusiastic over the tact and energy exhibited by their new inspector in stimulating educational activity. K.

SCHOOLS OF SCIENCE.

A number of the teachers of St. John, Portland and vicinity, have availed themselves of the course of elementary lectures in natural science—which are being given this winter under the auspices of the New Brunswick Natural History Society. The plan of these lectures is essentially the same as that adopted by the Summer School of Science in July last. Mr. W. F. Best, chemist, has given a course of five elementary lectures in chemistry, the principal object being to show how teachers may conduct experiments cheaply and successfully before their classes. Mr. G. F. Matthew, M. A., has charge of the class at present, and has undertaken a course in mineralogy, with the tests for identifying the common minerals of the Province. A course of five lectures, each in zoology and botany will carry the work on until the middle of April.

The Halifax Teachers' Association has entered upon a professional course this winter, as they did last winter. Supervisor McKay occupied the chair at the opening meeting, and laid great stress in his address on free-hand drawing, physical training, and singing. The association has formed a class for instruction in drawing by Mr. Harvey of the Victoria School of Art. In addition, a class in natural science will be conducted on the lines of study laid down by the Summer School of Science for 1888. This class meets every Wednesday afternoon for practical work. Chemistry, physics and mineralogy are the first subjects taken up.

The Victoria School of Art and Design, Halifax, has been a grand success. The following letter from the Secretary, Supervisor McKay, was read before the city council December 27th:

I have been asked by the directors of the Victoria School of Art and Design to inform you that they have established an art school, which was opened on the 31st of last October, that they are working under the constitution which recently received your approval, and that they are carrying out the published programme. They, therefore, request the payment to their treasurer of the amount voted by your honorable body, for the establishment of an art school as a jubilee memorial. In doing so they have much pleasure in being able to report the success which has attended their efforts, as evidenced by the following facts: (1) There are one hundred and eighty-five pupils enrolled, not including a juvenile class now in operation, and a teachers' class to be opened immediately. (2). Of these so enrolled 105 are evening pupils, of whom 50 are free. (3). The class in mechanical drawing numbers 35, in architectural drawing, 25, in free-hand drawing 57, in model drawing 50. (4). The fees already paid in (mostly from the day classes) amount to $700. It is estimated that the amount for the year will not fall short of $1,500. (5). The sum of $5,000 has been invested in good securities. Over another thousand has been subscribed. (6). The teaching staff consists of a head master and three assistants. (7). The school has fairly good rooms over the Union Bank and in Stairs' buildings at a total rental of $387 per year. No other art school in the Dominion has met with such gratifying success so far.

BUBBLES AFLOAT.

The Duke of Argyle's great "conspiracy of silence."

The Star of Bethlehem in the east on fine December mornings. We hope our religious exchanges will not be found before the shrine of Venus under the impression that they are paying attention to the Star of Bethlehem. Read the Review and there is no fear of it.

A valiant Prince Edward Island doctor skilfully cut into the stomach of a fellow countryman, to capture a reptile which was suspected to have taken possession. Elaborate precautions were taken against its possible retreat into the lower intestines. The plucky doctor was completely foiled, however, in the attempted capture. By an unexpected strategic movement to the rear, on the first admission of light, the lively reptile eluded the nip of the surgical forceps, and after a series of maddening plunges, which were evidently feints, it dashed up the œsophagus and made good its escape through the mouth. We have often heard of medical men seeing snakes; and we extremely regret that on an occasion when the capture of one appeared to be all but certain, the hopes of the scientific world for ages should again be doomed to disappointment.

We have received from Geo. S. Milligan, Esq., LL. D., the report of the public schools of Newfoundland, under the Methodist Board, for the year ending Dec. 31st, 1886. We shall refer to some of its contents in detail in a future issue.

FERNDALE SCHOOL.

No. VIII. THE OX GAD-FLY, (*Œstrus bovis*, Latin.)

> "Est lucos Silari circa ilicibusque virentem
> Plurimus Alburnum volitans, cui nomen *asilo*
> Romanum est, *œstrum* Graii vertere vocantes,
> Asper, acerba sonans; quo tota exterrita silvis
> Diffugiunt armenta, furit mugitibus ether
> Concussus, silvæque et sicci ripa Tanagri.
> Hoc quondam monstro horribiles exercuit iras
> Inachiæ Juno pestem meditata juvencæ."
>
> *Georgicon, Lib.* iii., 146–153.

T. This was written at least thirty years before Christ was born, by the Latin poet Virgil. The grand old poet seems to have had his eyes wider open than many of our little dreaming poets of to-day. Jack, did your brother, who is attending the Academy, translate for us what Virgil said? He told me he would send it with you to-day.

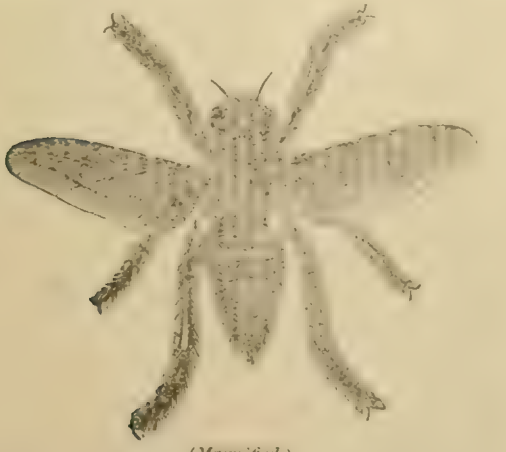
JACK. Yes, here it is. He said he thought he could make English poetry as good as Virgil, any way.

T. Well, if you please, let us hear it.

JACK. (Reading):

"By the grove of Silarus, Italian stream,
And Alburnus the mountain with oaks evergreen,
There fly in the noonday like beams of the sun
Fierce insects with stings and an angry hum.
With Romans *Asilus* it bears for a name,
With Greeks it is *Œstrus*, but stings all the same.
When Jupiter changed fair Io to a cow,
Mad Juno with these carried on the old row.
When the angry hiss of their arrowlike flight
Announces their presence, the cattle take fright;
They dash through the thickets and bellow in pain
Till they shake dry Tanagrus, the wood, mount and
plain."

T. Well Jack, you can tell your brother that as to the *English* he has the advantage of Virgil, but as to the *poetry*, it is *vice versa* I am afraid. You know that much Latin. Now, here is this fly enlarged.



(*Magnified.*)

THE OX BOT-FLY (OR GAD-FLY.)

For over 2,000 years it has been tormenting cattle and has followed them to every part of the world. Have any of you seen it?

JACK. Yes. All at once on a hot summer day, as soon as the cattle hear the buzz of the fly, they shake their heads, toss their horns, stiffen their tails out straight in the air, and gallop about bellowing like mad.

T. Why, Jack, your description puts Virgil's in the shade. But we have a specimen in our collection, caught by some deft wielder of the net. Let us compare it with our enlarged drawing. How long is it?

CHORUS. Nearly half an inch.

T. Its body is—

CHORUS. Very hairy.

T. It belongs to the order—

CHORUS. Diptera, because it has only two wings.

T. Color of the wings?

CHORUS. Nearly transparent, smoky brown.

T. The hair about its face?

CHORUS. Yellowish.

T. The color of the tips of the abdomen?

CHORUS. Orange.

T. Of the middle of the abdomen?

CHORUS. Black.

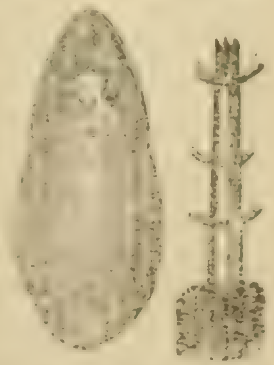
T. Of the portion of the abdomen next the thorax or middle division of the insect?

CHORUS. Greyish white.

T. The thorax is not hairy, but is black—

CHORUS. With white and yellow bands.

T. This fly is found from June to September, endeavoring to place its eggs on the back of cattle. At the end of its abdomen is something looking like a sting; but it is really an ovipositor, that is, an egg placer. If it were magnified under the microscope, it would appear to be a very tiny tube of four joints which close into one another like the tubes of a telescope. Here it is pictured at the right. At the end of each joint is a minute circle of fine hairs. The end joint makes a very small puncture in the skin of the ox and leaves a very minute egg in it. This egg is soon hatched and the small maggot—the larva of the fly—makes its way beneath the skin where it scoops out a little dwelling place for itself during the winter. Here it is sure to be warm enough, and to have abundant nourishment.



Imago issuing from cocoon and ovipositor magnified.

Tom. There are lots of lumps on the backs of our cows; they call them *warbles*. They will be bigger in the spring; and sometimes they can squeeze big, ugly, soft grubs out of them. Are they caused by this gad-fly?

T. They are the larval stage of the gad-fly.

Jim. And there are holes in some of the hides coming to the tannery caused by the warbles.

T. Yes. And it is provoking to think that these flies specially hanker after and torment the most vigorous of the herd.

Scholar. How can the larvæ get out of the warbles?

T. By June or July, when they are full grown, they enlarge the opening through the hide of the animal by constant gentle pressure, until at last they come out backwards and roll down to the ground. The skin of the larva then hardens, turns black, and changes into a kind of cocoon. This is the pupa stage in which it remains for about one month. The imago or perfect fly then breaks forth from out of its cocoon, as is shown in our cut to the left of the ovipositor.

Scholar. Why is it called a bot-fly?

T. The word "bot" was probably the same as the original of our word "bite." There is one kind of these larvæ found clinging to the stomach of the horse, appearing as if *biting* its coat. There is one also which is destructive to sheep. The larvæ *bites* its way into the brain. In some parts of England there are people who yet say, "*they botte*" for "they bit." The bots, then, were grubs which appeared to live by *biting* living animals.

Scholar. And why are they called gad-flies?

T. "Gad" is the old Anglo-Saxon word which meant a sharp point. For instance, an arrow point, a lance point, a sting, used to be called by the earliest Englishmen a "gad." "Goad" is the modern form of the word, and is the name of a sharp pointed stick used to drive oxen even yet by some people who should be more humane. A gad-fly was a "goad-fly"—a pricking or stinging fly. Some or these flies have also been called *Breeze* flies, from a very old word descriptive of the buzzing sound made by them.

In order to make our lessons connected, our next shall be on the gad-fly of the horse and of the sheep. We generally find the greatest scientific interest in what also involves the most important industrial consequences.

The Maritime Province Experimental Farm has been located at Nappan, near Amherst, and will consist of 360 acres of fine land.

AMONG THE CONSTELLATIONS.

No. V.—Orion.

> "Seek him that maketh the seven stars and Orion, and turneth the shadow of death into the morning, and maketh the day dark with night; that calleth for the waters of the sea, and poureth them out upon the face of the earth; the Lord is his name."—Amos v. viii.
>
> "Which maketh the Bear, Orion and the Pleiades."—Job ix. 9.
>
> "Canst thou bind the cluster of the Pleiades or loose the bands of Orion?"—Job xxxviii. 31.

Well up in the southern sky during January nights is this most picturesque and most anciently named of all the constellations. As it swings slowly from the eastern to the western horizon, its position is also one of the most conspicuous. It reigns over our snow clad nights. Pope in his Winter, lines 85–87, does it too scant justice for our Canadian sky when he sings:

> "But see, Orion sheds unwholesome dews;
> Arise, the Pines a noxious shade diffuse;
> Sharp Boreas blows, and Nature feels decay."

Four stars, forming a large, slightly oblique X with a belt of three stars across its centre, distinctly outline the constellation. The eastern upper star is Alpha, or *Betelgeuse* of the first magnitude; the western, Gamma or *Bellatrix* of the second magnitude. The western lower star is Beta or *Rigel* of the first magnitude; the eastern, Kappa of the second magnitude. Betelgeuse and Bellatrix are respectively near the right and left shoulders of Orion, and Kappa and Rigel mark approximately the position of the right and left foot.

The three stars in the centre indicating Orion's belt, are of the second magnitude and are named, beginning with the highest, as follows: Delta, Epsilon and Zeta. They are often called the "yard stick" in Canada. They have also received the names of Jacob's Staff, the Golden Yard of the Seaman, and the Three Kings of the Soothsayers.

Orion can be seen all over the world. Mythology speaks of him as a mighty hunter, and some go so far as to say that he represents Nimrod. Modern hero worship has more than once attempted to change this name. In England it was proposed to change it to Nelson. In 1807 the University of Leipsic actually resolved that all the stars forming the belt and sword of Orion should henceforth be known only by the name of Napoleon.

The sword of Orion is represented by three faint stars, of the fourth magnitude; hanging down below the middle of the belt. The central one of these, Theta, is in one of the finest nebulæ of the heavens, and is distinctly visible through an ordinary telescope or good opera glass.

There are two stars of the first magnitude in the constellation, four of the second magnitude, and five of the third magnitude. The naked eye can distinguish between 120 and 150; an average binocular over 2,000; while with a large telescope they become practically innumerable.

When Orion is in the south—near midnight—the constellation directly above it, or north and northwest of it is Taurus; northeast of it, Gemini; east of it, Monoceros; southeast of it, Canis Major; south of it, Lepus; west of it, Eridanus. The line through the three stars of its belt when produced upwards will pass a little below the red star Aldebaran, and into the Pleiades in Taurus; produced downwards, it will pass a little above Sirius in Canis Major, the brightest fixed star in the heavens.

> "Orion's belt from Taurus' eye
> Leads down to Sirius bright;
> His spreading shoulders guide you east,
> 'Bove Procyon's pleasing light."

THE PLANETS FOR JANUARY.

The morning sky will be resplendent this month with two of the most brilliant planets—Venus and Jupiter—and ruddy Mars. On the 2nd, Venus and Jupiter were in conjunction, Jupiter being south of the former only about four moon-breadths, and relatively moving westwardly. About the beginning of the month these two planets rise about three hours before the sun. At the end Venus rises a little later and Jupiter about an hour and a half earlier than at the beginning of the month; Mars will rise from six to seven hours earlier than the sun. He is in the constellation Virgo. Jupiter moves from Libra into Scorpio, being in close conjunction with Beta of Scorpio on the 24th on the south. Saturn will be morning star in Cancer until this date, when it is nearly opposite the sun, and is therefore seen at midnight south of the zenith. It then becomes an evening star.

The moon rises eclipsed on the 28th. The total phase ends at 8h. 9m. P. M. (60th meridian time). Last contact with shadow 9h. 9m. Last contact with penumbra 10h. 11m.

Eclipse of the sun, invisible in Atlantic provinces, February 11th.

There are several errors in the planetary phenomena of Belcher's Almanac for the month of January. They are probably due to careless proof-reading; but the number and importance of them are more than ordinary.

THE KINDERGARTEN AND THE PUBLIC SCHOOL.

E. J. James, Ph. D., Professor of Public Finance and Administration, Wharton School of Finance and Economy, University of Pennsylvania, sums an address on the subject as follows:

1. That the three years preceding the school age are, for certain educational purposes, the most valuable years of the child's life.

2. That under our present system of public and private education, these years are, relatively speaking, wasted.

3. That this waste is just as general among the rich as among the poor, and is little less ruinous to the former than to the latter.

4. That it may be largely saved by the general introduction of some such institution as the kindergarten.

5. That such general introduction is only possible in the form of free kindergartens, established in connection with our public schools, in sufficient numbers to accommodate all children sent to them.

6. That the necessary outlay for such kindergartens would be amply repaid to society by the increased productiveness of the generation educated within them.

7. That owing to the economic condition of our society, which prevents the majority of our children from going to school beyond the tenth year, the only means of securing the minimum of education absolutely necessary to the welfare of our society lies in utilizing for educational purposes the three years preceding the school age, and the only institution which promises to do this is the kindergarten.

8. That the essential condition of success in this movement is a supply of properly trained teachers, which can be insured only by the establishment of an adequately equipped training school for kindergarten teachers.

9. That the first step towards this is the establishment of a kindergarten class in connection with the city normal school.

OUR public school education should not tend to wean our youth from labor and industrial avocations. On the other hand, it should aim at dignifying labor and stimulating thought for the improvement of industrial processes. This will not prevent the literary development of those with a literary genius, and it will also give them a sound substratum of intelligence—stimulating knowledge, which will add very greatly to the power of their special endowment.

For the Review].

LANGUAGE LESSONS.

Some years ago it was taken for granted by many teachers that children knew nothing when they first entered the school-room, had no power of acquiring facts, and that the first and for some time the only thing they should learn was to read. Now we regard these small folk as interesting possibilities, endowed with a complete mind (though in a rudimentary state), and know that they have already begun the storing up of facts and ideas to which it is our business to add, while constantly seeking to develop two things—*thought* and its *expression.*

In order to furnish material for the former, and also to train the senses (that they may make discoveries for themselves) we give our primary scholars lessons upon all kinds of objects; likewise upon number, size, direction, form, color, etc. All of which, as well as every reading lesson implies, of course, training in language. But, since the aim of all our teaching is the development of thought—and language is, perhaps, as needful to thought as to its expression—it follows that children require a closer and more persistent training in language than these lessons afford.

This we endeavor to accomplish by means of language lessons on pictures, plants, animals and rocks; natural phenomena as hail, snow, rain; and physical features such as hills, valleys, rivers, etc.; while at the same time a small beginning is made in scientific study. Doubtless, many will smile at the idea of science in connection with a child of six or seven years; yet, experience has taught that at no later period of school-life will they enter into the study of nature (presented after a child-like fashion) with a keener zest, for they love animals, birds, and growing things, and delight in learning about them.

Nevertheless, while laying the foundation upon which geography, botany and zoology may in due time be reared, we must not lose ourselves in these; but, bearing in mind that the controlling subject at this period is the impression of thought, teach *language* from beginning to end of every lesson.

Though it is a difficult matter to lead young children to express their ideas clearly in the school-room, yet under the stimulus of some thought they desire to convey they will talk as freely as if at home, thus proving that it is not so much their limited *vocabularies* as self-consciousness that embarrasses them and hinders expression.

Hence, the first part of language work takes up what may, perhaps, be termed the *unconscious* side, where the child is so under the control of the thought that he is, in a measure, unaware of the means by which he expresses it.

The exercises at this stage are necessarily simple, and may be conducted in various ways. For example: Ask the class to tell the names of different kinds of birds; from the array of hands select the dullest pupil to give the first answer, which is quickly printed on the board, the next, and the next, until all the hands are down. Question until their small stock of knowledge concerning birds and their habits is exhausted, continuing to print the best answers. Next morning the children find the words and sentences neatly reprinted on the board, and copy them as *busy* work, while at a later period in the day they construct oral sentences, each containing one of the words.

After a similar plan, one may give lessons on animals, fishes and flowers. Still another form of language work calling for at least one original sentence from the children, is illustrated by the following :—Ask what day of the week it is, print the answer, then what kind of a day, what season of the year, and so on, printing the various descriptive words under the date as fast as given. (I find even the youngest child quite ready to talk about the weather). Have them read by the pupils. Next morning they copy the list, and in the afternoon print short stories containing the words, some of which are interesting weather reports.

When we have succeeded in getting the children to talk freely, we take up the second part of language work, during which they are trained in the use of new words, introduced to new idioms, led to make new combinations of sentences, and to describe accurately what they see. Action lessons are good training in the latter, while a *picture* may be used very successfully to familiarize them with new idioms such as, "this is," "here is," "he has," "is going," etc. When, by a few skilful questions, they have been led to use these words in describing the picture, the best sentences are printed on the board, to be utilized next day as busy work.

Again:—A story lesson may be given—its purpose being to arouse thought, and lead to its expression, as well as to *give* and teach the children to *use* new words. It should be made graphic by sketching the objects introduced, whenever practicable, while the new words are printed on the board instead of spoken. To illustrate: The teacher standing in front of the blackboard says, "I am going to tell you about an—" turning quickly to the board, she 'prints;' "animal," read the children; "that wears—" she prints; "horns," pronounce the children; "like that," she continues, rapidly sketching the horn of a moose, "called—" she says; then prints antlers; but not a hand is raised, not a voice is heard; no one knows the word.

Slowly she reprints the first syllable, the scholars giving each letter its sound, then the last, and so the new word is pronounced.

She says, "I will print the word—what is it?" "antlers," reply the children; "at the top of the board, help the crayon to say it." They pronounce slowly as she prints. "Now, I will print it just at the—which side?" "Left, west;" they reply, "If you know what this word is you may tell me," and before the first syllable is printed they pronounce it. "Why," she says, "you got that word away from me."

Then she goes on. "These—" "antlers," chorus the little people, "are—" "solid;" they read; ("What does solid mean?" is the unexpected question, which, however, they are pretty certain to answer correctly), "and fall off late in the—" "winter," they say. "What is winter?" she asks. Having received the correct reply, she continues: "He is about the size of a—" prints. "Horse," declare the watchful children; "he" proceeds the teacher, "has—," prints; "slender legs and split hoofs!" interpolates the chorus. "He does not wear—a" "coat," they read, "like yours," facing about, and pointing to some little fellow, "nor is it like mine." "It is made of—" "clean short hair," they read; "and sometimes it is—" "red, and sometimes greyish," call out the class. "It is—" "a moose," they triumphantly declare.

Drawing rapidly as she talks, she questions them about the cow's horns, and soon completes her sketch, and a moose stands displayed upon the board. "This"—"moose," they read, "lived in a—" "forest," chorus the scholars. ("What is a forest!" she questions), "through which flowed a—" printing, "beautiful"—again no response, so this word must be taught after the fashion of the previous unknown word. Then comes the question, "What could it have been that flowed through a forest?" and the word river is added to the list.

"One—" she resumes, "pleasant day," they read, "two—" prints travellers,—no responsive voice this time; so another word is taught, and yet another, for "decided," the next word printed is also unknown; "to shorten their"—"journey," they read; "by following a—" "path through this forest," they announce.

And thus the story continues, during which they are led to fancy a herd of moose by the river side—some drinking, others ruminating, while the description of their rapid flight at the sound of a breaking branch shows their acute hearing and habit of getting up on the hind feet first.

At its close she says, "Who can tell me a nice story now about this animal?"

Every one seems eager to do so. "Well, you may think it over, perhaps you will dream about it to-night, and to-morrow I hope you will be ready to tell me all about it. Who wants to do something else for me?" "Then you can ask your fathers and mothers what other animals have antlers."

(This request is made with the hope of interesting the parents in the school, and so stretching a thread of interest, however slender, between the school and home).

In the morning, the class carefully copies (with pencil, in exercise-book) the words gained from the lesson of the previous day.

In the afternoon they repeat the story, each trying how many words from the blackboard he can weave into his narrative.

Then each child is requested to give an original sentence (sometimes in the form of a question) containing at least one new word, which is thus added to his vocabulary.

The following day they will be invited to express in written language the ideas obtained from the story.

This second form of language work, viz., "talking with the pencil," should not follow *immediately* after a lesson, for fear that the children remember their phrases, and so fail to gain the greatest possible amount of language training.

CLARA A. ATKINSON.

Newcastle, N. B.

[For the REVIEW.]

A YEAR'S EDUCATIONAL PROGRESS IN NEW BRUNSWICK.

Another year has gone, and, no doubt, has left its scars, but it has also scored its triumphs; and, we believe, not a few in the cause of education in this Province. The amount of good accomplished in this world is far in excess of the evil—each day, week and year, has its trials for the teacher, and alsó the satisfaction of some new thing begun, or real progress attained. Much good work is performed that never appears on the surface, and therefore appears unappreciated, but the painstaking and conscientious teacher has, as such, his own reward in the pleasure experienced in the faithful performance of his various duties, even if he is not rewarded in a more tangible way. But let us pause here. Have the salaries of teachers in this Province increased during the year? Perhaps not, on the whole. But it can be truthfully said that the most deserving teachers have obtained the highest salaries—that a first-class teacher has been better rewarded than a second-class teacher, and a second-class teacher than a third. Again, putting a teacher of one class against another of the same, it may confidently be asserted that the teacher who had the best reputation as such, was first engaged. Surely this argues the necessity of constant self-improvement, to enable us to climb the ladder of success. During the past year, first-class teachers seldom failed to secure employment. Second-class teachers were always in demand. What shall I say of third-class teachers? There are too many of them, and their field of labor is rapidly narrowing in New Brunswick. Many third-class teachers are doing excellent work, but a teacher of this class who is content to stand still here, has not the requisite amount of ambition to properly qualify for an instructor. The excessive number of third-class teachers was produced, no doubt, by the short term system at the Normal school, and we have to note the lengthening of the term at that institution as one of the most progressive steps in the educational history for the year. We may express the hope that many will pass before any retrogression will take place in this particular. This is a guarantee for fewer low-class and unskilled teachers, and less competition and underbidding.

It cannot be denied that enthusiasm in educational matters has somewhat waned since the inception of the school law. This, perhaps, was to be expected, as novelty always excites attention; but the people of this Province are not by any means dead as to the advantages afforded by free schools, nor do they lack appreciation for well directed effort. A little revival in these matters is necessary, and none are so well situated to effect it as the teachers themselves. Instead of constantly bewailing the severity of our lot, and bringing on ourselves contempt by—as one newspaper styles it,—our constant "wail for cash," let us set to work as in other professions to achieve success, and we cannot fail to claim its reward.

A very successful Institute has been held during the year in St. John, and no doubt these annual gatherings possess many advantages, not the least among which is the social intercourse afforded by them to teachers. The papers read, too, and the discussions participated in, have their value. But are we practical enough? Do we not have too many papers and not enough discussion? Everything seems too hurried, and by the time those who always speak two or three times, no matter what comes up, in order to explain their particular position, have spoken, the time has expired and the benefits are greatly curtailed thereby. Many favour the idea next year of an Inter-provincial Institute embracing the Maritime Provinces. It is understood to be favoured by Nova Scotia and Prince Edward Island. Many teachers who attended the Provincial Institute remained to attend the Summer School of Science, which may be considered another step in advance, as it was convened, for the first time, last year, and the benefits resulting from it must have been very great.

Some new text-books were introduced during the year, and as their recommendation was prompted by experience and practical knowledge, they no doubt will confer the advantages expected of them. The new arithmetic is well conceived from an educational standpoint, but has been nearly spoiled typographically. The text on the science subjects by Dr. Bailey is all that was expected, and will no doubt be a valuable aid to both teachers and pupils. Such a book has long been needed. The new copy-books have not as yet received a very warm welcome, but perhaps time and use may tend to reconcile them to the profession. They are perhaps useful rather than ornamental, and this may be as it should be.

Another decided step in advance was the inauguration of an Arbor Day throughout the Province. If we are to judge from the number of trees planted, and the amount of ornamentation to the school grounds, the action of the Board of Education in allowing and appointing the day was a very popular one.

The position taken by our schools in the Colonial Exhibition showed that they were second to none in the excellence of their work, and demonstrated the strength of our free school system.

It was confidently hoped by the friends of education that before this time a compulsory clause would have been introduced into our school law, as it should have been long ago. When we consider that of the total enrolment of the Province but little over fifty per cent. of the pupils attend school every day, and that nearly one-fourth of the children of schoolable age do not attend school at all, it is surely high time that such a clause was enacted. Many thought that a permissive compulsory clause would be carried last winter. The bill passed the lower house but was not introduced into the upper, and so we will have to wait to chronicle even this much until some other year, it may be hoped this.

Another change that was anxiously looked for—and this concerns trustees more than teachers—was a change in the present assessment law to make property pay taxes in the district in which it is situated. Much hardship and consequent complaint arises from the working of the law as it now is. Villages and thickly settled places which are well able to support schools of their own resources, are deriving no small amount of support each year from remote and poor districts, often in consequence rendered too poor to support schools but for a portion of the year.

While we are speaking of trustees, we may refer to a very bad and growing habit of extending the summer holidays at will, disregarding entirely the teachers' inclinations in the matter, and even terminating agreements to effect a small saving.

But these are some of our failures, and do not smack at all of progress. Perhaps it would be well to conclude here. C.

St. John.

HOW TO TEACH OUR PUPILS THE MEANING OF GOVERNMENT.

[The substance of an address before the Carleton Co., N. B., Teachers' Institute, by Inspector I. B. Oakes, A. M.]

"What is the capital of New Brunswick?" is a common question in our schools. The answer is nearly always "Fredericton." When we ask why it is called the capital, the pupils generally reply, "Because the laws are made there, and the Governor resides there;" though they sometimes say, "Because it is the largest city." But when we attempt to go further to ascertain what conception they have of laws, and governor, and government, we often find a comparative blank. What is a law? Who makes the laws? How many law-makers are there? Who are they in this country? How are they selected? When do they meet at Fredericton? When do they generally separate? To these and other similar questions, satisfactory answers are seldom given.

It would not, however, be difficult to awaken these ideas by a series of familiar conversations.

1st. Call attention to some of the rules of the school: Pupils must not whisper during study hours; recess comes at 10.30 o'clock, etc. These are laws made by the teacher, or by teacher and pupils conjointly. These laws or rules, carried into effect, constitute government; the teacher being governor, the pupils the subjects, the school-room and premises the territory.

2nd. The school shall open at nine o'clock and close at four o'clock. These are laws made by trustees. They are the government, the ratepayers form the constituency, the school district their territory. How are these law-makers elected? At the annual election in October. Who are the trustees? Let them be named, and other laws they make be pointed out.

3rd. Call attention to the parish election; the councillors' names; their jurisdiction; their territory; the people they represent; the necessity of their election, and the results if they were not at the Council Board.

4th. Direct the thought of the school to the Municipal Council at the county town, the number of councillors from each parish, the laws they make, the territory they govern. The place of meeting is the capital of the county, the court house is their parliament building. Let the pupils know when they meet and how often, and some of the laws they have made.

5th. Call attention to the last provincial election, the names of the county representatives, the place of meeting (Fredericton), the Parliament building in which they assemble (hence House of Assembly), how many from each county? How many in all? The speaker their chairman. Some of the laws they make, for example: The school shall be taught by a licensed teacher. It shall be in session six hours a day. The annual school meeting shall be on the second Thursday in October, etc.

6th. Explain the functions of the Governor; give his name. Show that he stands for the Queen, and for her sanctions the laws when made in the House of Assembly and approved of by the Legislative Council, thus showing the three branches of the Legislature; and, if deemed necessary, the men who carry into effect the laws, could be named, viz., the Executive Council. The whole province is the territory.

7th. Reference might next be made to the Dominion election and the representative of the county named. He goes, not to Fredericton, but to Ottawa. He meets not only the others from the different counties of New Brunswick, but from each county of each province all over the Dominion. Describe Ottawa; the Parliament buildings. Point out the time of meeting, some of the laws made there, the Governor General, the Senate, the House of Commons, similar to the corresponding provincial branches, but called by other names, etc., etc. You thus show that each governing body is a circle, one within the others until you reach the outer circle, the Dominion, and each governing within its own prescribed limits of jurisdiction. Each male pupil, will, by and by, help elect the law-makers in all the circles of power. How important that he prepare at school to vote wisely, to understand that the one elected is rather the servant than the master of the people, that in reality the people are the government, only lending their power to another to exercise for them. Thus, the boys, and the girls as well, should be enabled to understand the privileges and the responsibilities of citizenship, and take a warm interest in every measure that affects the commonwealth. This condition ensures a strong national as well as individual life.

It might be well to point out that within each person—each pupil—there is or should be a government. The heart is the territory or empire. The passions, affections, will, etc., should be subservient to law. Christ should be Governor and King. His law the rule of life. Thus is His Kingdom established in the hearts of men, and thus His "Kingdom will come."

SCIENTIFIC NOTES.

At the December meeting of the Nova Scotian Institute of Science, a paper on the Diurnal Lepidoptera of the Province was read by A. P. Silver, Esq. His collection is said to be the most complete in this section of the Dominion. He treated in a very graphic manner the transformations of some species, their variations and migrations, and sketched a few brilliant blackboard illustrations, the effect of the whole being to fascinate his audience with the study of entomology. In the midst of a busy mercantile life, Mr. Silver has utilized his holidays as people of good means generally do, but with the addition of noting his observations and capturing new specimens wherever found. The result is that Mr. Silver's recreations eventually benefit others as well as himself, and permanently advance the knowledge of our environment. Our readers can do likewise in some branch of science. We are glad to learn that the Institute is likely to have papers from Mr. Silver on the Nocturnal Lepidoptera and on the Coleoptera, at some future date.

Fluorine has at length been isolated in considerable quantities by M. Henri Moissau. He had been at work for three years on the problem at great expense, as platinum was the only material which could stand the corrosion at all, and that only for a short time. Fluorine has the most intense chemical activity of any of the elements.

EDUCATIONAL OPINION.

Religious Intelligencer: "The salaries of teachers generally are too small. Better work would be had for better pay. There is no economy in keeping the teachers' pay down. There may be a seeming saving of a few dollars, but the pupils suffer a loss that cannot be estimated in dollars. But low as salaries are in the Maritime Provinces, Quebec goes lower. In the eastern townships of that Province $150 is about the average yearly pay. The consequence is that few men and women of ability enter the profession. There are about 700 teachers in the province who have no professional certificates. The state of education is deplorable indeed."

Woodstock Press: "Nothing will encourage teachers more than the sympathy of the parents of those placed under their care. Parents do not generally take much interest in the exercises of the school room, nor are they apt to enquire as closely into the progress of their children's education as they are into their ordinary concerns of life; and yet they undoubtedly feel an interest in the relations of children and teacher much greater than they are apt to express. The children who make the greatest advance in their studies, and who are most attached to their school, are those whose parents devote at least a short time each day or evening to their lessons. We venture a step further—the families where the most mutual happiness is found are those where a common interest exists between parents and children in the lessons and duties at school as well as those at home."

John MacDonald in the "Topeka Capital": Will our beloved and good-looking brother, the reporter, be kind and Christian enough to refrain from calling teachers pedagogues? The word may have been fitting enough in the eighteenth century, and in the dark ages, but it in no way applies to the teachers of these latter days. For what is a pedagogue? A dogmatical, ostentatious creature; a Nathaniel Holofernes; a fossil; an abstraction; a human being who does not assimilate knowledge, but who holds it on shelves in his mind; a being mainly of parchment, and not of flesh and blood; in the world, but not of it, "a hide-bound pedant." The teacher of our day is a genial, broad, many-sided, sympathetic human being, and a lover of his kind. But are there not exceptions? Oh, yes, "the poor ye have always with you." Just a few specimens—chiefly in the mummy condition to remind us of what once we were.

SCHOOL AND COLLEGE.

St. Francis Xavier College is building a large gymnasium.

Dalhousie College has advertised new "Munro Exhibitions and Bursaries" for junior matriculation. *Five* exhibitions of the annual value of $150 for two years, and *ten* bursaries of the annual value of $100 for two years.

From the *Acadia Athenæum* we learn that the students holding scholarships in Acadia are likely to surrender them to the college. In 1886 there was a deficit in the college finances of $330.22; in 1887, $1,045.78. The loyalty of the friends of Acadia will not long admit of a deficit in the funds of this popular institution.

The closing exercises of the University of Mount Allison were held in Lingley Hall, Sackville, Dec. 20th, and were, as usual, of a deeply interesting nature. Recitations, essays, a French dialogue, and a debate formed the chief features of the exercises, while the musical programme testified to the thorough character of the instruction in this branch. We rejoice to hear that the opening term of the academical year has been unusually prosperous, both at the Male Academy and at the Ladies' College, Principal Borden stating that the number of pupils in attendance at the latter, 107, is greater than ever before. The institutions composing Mt. Allison University were never more completely equipped and prepared to give a liberal and thorough education, and as evidence of this it is safe to say they were never more popular.

The examinations at the College of St. Joseph, Memramcook, took place prior to the close for the Christmas vacation. The number of students in attendance this year is greater than ever before.

BANQUET TO PRINCIPAL ANDERSON.

[The Daily Sun, St. John, December 22nd].

The other day in Charlottetown a public banquet was given to a teacher. The dinner was given by former students of Prince of Wales College, and the guest of the evening was Principal Anderson of that institution. Professor Anderson has delivered a few lectures outside his Province, has done some literary work, and is now one of the editors of the EDUCATIONAL REVIEW. But his life work has been given to the cause of education in Prince Edward Island. He has completed a quarter of a century of service as Principal of the college at Charlottetown, and it is not wrong to speak of that college as his workmanship. Many men who have made for themselves a wider reputation than Mr. Anderson is likely to gain, gratefully acknowledge their indebtedness to him. Dr. Schurman, the young professor of philosophy at Cornell, whom enthusiastic students of metaphysics place in the first rank of American schoolmen, and who has sat at the feet of the great lecturers in two continents, says that his old Charlottetown professor, rather than any of these, is his ideal teacher. Like sentiments were expressed in the speeches of several eminent public men who attended the banquet. It is not remarkable that a man of whom such things can be said, and who has done his Province so much service, should be thus honored. When one comes to think of it, the wonder is, that such things do not oftener occur. Here is a man whose services to the Province exceed that of any half dozen statesmen that ever lived in it, who has labored on a small salary while his pupils have gone out into the world, some to become famous, some to become rich, many to attain positions of honor and trust. Until now it has not occurred to any person to look upon this teacher as a fit subject for the honorable notice so freely bestowed upon politicians who talk. It may be that we are coming upon a time when the true benefactors in the land will be sought out and given assurance of public approval.

PERSONAL NOTES.

Mr. W. S. Carter, A. M., the youngest of the New Brunswick corps of school inspectors, has been for some weeks the recipient of many congratulations. The REVIEW most heartily joins in wishing Mr. and Mrs. Carter many years of happiness and prosperity. At a recent meeting of inspectors the welcome extended to Mr. Carter—the last of their number to leave the ranks of bachelordom—was, we believe, of a very genial nature.

Mr. James Vroom, of St. Stephen, has been elected a corresponding member of the Torrey Botanical Club of New York.

Dr. Asa Gray, the leading botanist of America, is lying at Cambridge very ill. He had an attack of hemiplegia on Monday, 28th November. Dr. Lawson, President of the Royal Society of Canada, is having regular bulletins of the state of his health. From him our latest intelligence is that there is no improvement; but there is no indication of severe suffering.

Professor Roberts, of Kings College, is said to be writing a history of "Joseph Howe and his Times." The work is in good hands.

A. J. Pineo, Esq., A. B., Instructor in the Nova Scotian School of Science, and late of the *New Star*, Kentville, has purchased the Picton *News*. We wish him success.

We have received a catalogue of the College of Physicians and Surgeons, Baltimore, U. S. A., from R. M. Smith, a Pictovian and late principal of the Maitland schools, N. S., who is now in attendance.

Professor Balfour Stewart, Owen's College, Manchester, died on Sunday, December 18th. He left the college on Friday, apparently in his usual health and in good spirits, intending to spend his holidays in his Irish home.

Mr. Edward Manning, M. A., has been appointed mathematical master of the St. John Grammar School in place of Mr. A. W. Macrae, B.A., resigned. Mr. Manning's long experience as a teacher makes the appointment an excellent one.

The death of Mr. Frank H. Osburn, son of Henry Osburn, Esq., of St. Andrews, N. B., at New York in

December, is a deep affliction to his parents, who have received the heartfelt sympathy of the young man's former classmates at the New York College of Dentistry.

Mr. Arthur L. Calhoun, of the Boston *Traveller*, will please accept our thanks for the handsome and convenient calendar which he has sent us.

Mr. Geo. F. Fenwick, formerly of the Collegiate School, Fredericton, N. B., and now of Montana, is visiting New Brunswick.

Miss Charlotte G. Montgomery and Miss Annie Montgomery, cousins of the Chief Superintendent of Schools for Prince Edward Island, have been for some time at Hamadan, Persia, where they have been laboring under the direction of the American Board of Foreign Missions.

Geo. F. Smith, a pupil of Mr. Brittain's Superior School, Petitcodiac, N. B., who entered as a second year student at the McGill University, Montreal, lead his class in mathematics at the recent examination. This speaks well for his preliminary training.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

STUDENT gives the following answers to questions asked:

1. In REVIEW No. 4, the question was asked, "Why did 4 pounds 6 ounces of ice in the morning weigh 4 pounds 8 ounces in the evening?" ANS.—The ice condensed 2 ounces of moisture from the air which was very warm and no doubt nearly saturated with moisture.

2. To F. H. E.'s problem in No. 7. ANS.—When a tumbler with a considerable amount of air is depressed mouth downward in water, before applying the glass plate to it, the pressure of the water compresses the air. When the tumbler is suddenly raised, with the glass plate against its mouth, this pressure is taken off, and the air slightly expanding presses out some water and thus presses off the plate. This tendency is exaggerated by the warmth of the hand also causing the air to expand beyond its original volume. But if the tumbler with the plate to its mouth be kept slightly inclined for a short time, so as to allow the enclosed air expanding to its maximum volume, to press out the surplus water without admitting any more air, then I have seen a tumbler nearly full of air, with no more than a quarter of an inch of water over the glass plate, keep it supported in position. The success of the experiment is surer if the tumbler be warmed by the hand while the water is draining away.

SUBSCRIBER.—"Whether is wood ashes a mineral or vegetable substance?"

It is mineral in the scientific sense of the term, although it is of vegetable origin.

J. S. M.—"Two plants found some time ago by a friend on Tracadie Sandhills."

No. 1 is the "Alpine Juniper" *(Juniperus Communis*, L., var. *Alpina*, L.) No. 2 is the "Ground Cedar," *(Juniperus Sabina*, L., var. *procumbens*, Pursh).

J. S.—"Is this Labrador tea?"

It is. Scientific name, *Ledum latifolium.*

H. V.—"Is the velocity of light 160,000 miles per second as stated in the last article 'Among the Constellations?'"

160,000 was a misprint for 180,000. Errors in correcting proof often occur in spite of the greatest care. The context shows that the correct figures were used for the computation.

SC. ST., in answer to problem of F. H. E., says: "Let us take the case of the inverted tumbler partly filled with air and closed with paper. Supposing the pressure of the air inside the tumbler to be the same as that outside the tumbler, say 15 pounds to the square inch, and the weight of the water above the paper to be .1 pound on the square inch, and the weight of the paper to be .01 pound to the square inch. The upward pressure of the air on the paper would be 15 pounds on the square inch, the downward pressure 15.11 pounds. If the paper were inflexible like a plate of glass it would fall. But the paper bulges down in the centre slightly, the air within expands and therefore its pressure becomes less, say 14.8 pounds on the square inch. Add to that the weight of the water and paper and we have a downward pressure of 14.91 pounds, against an upward pressure of 15 pounds on the square inch. Therefore the paper is kept in position by an upward pressure of .09 pounds on the square inch.

When glass is used, it is in the first place heavier than paper, and therefore more difficult to support. In the second place it does not bulge down in the centre to allow of a sufficient expansion of air within the tumbler to reduce its pressure so much on each square inch as would be equal to the weight of water and glass supported per square inch. But if the glass plate should be kept inclined for some time so as to allow all the water possible to drain away without admitting any more air, then an equilibrium of upward and downward pressure on the glass results. The surface (capillary) attraction between the glass plate and the water and the rim of the tumbler, assists the upward pressure of the air (the same occurs in the case of the paper), and therefore determines the stability of the plate when the upward and downward pressures are about equal."

Other questions received will be answered in the next number.

BOOK REVIEWS.

HAND-BOOK OF VOLAPUK, by Charles E. Sprague, member of the Academy of Volapuk, President of the Institute of Accounts. $1.00. There have been many attempts at the formation of an international language, and such attempts are even yet being made. But in the struggle for existence, they have all disappeared except Johann Martin Schleyer's scheme. We believe, and so do the most of English philologists, so far as they have indicated their opinions, that English with a simplified orthography, might nearly as conveniently be adopted by other nations as *the* International language, while it has the advantage of already being the most extensively spoken language in the world. We have no sympathy, however, with those who ignorantly say Volapuk is no language. It is the best language in existence, and has the greatest potentiality involved in its principles. It fails only in one essential point, and that is, that it is not at present the spoken language of a dominant race or civilization. But it has done already what no other language has been able to accomplish. In five or six years from the date of its creation, it has been studied by over 200,000 individuals, and has a bibliography of ninety-six books in thirteen different languages, and can boast of no less than eleven periodicals. The English roots of the language we also find to be nearly equal to the roots from all other languages put together, namely forty per cent.

We have examined a number of Volapuk text-books for English people, and have no hesitation in saying that while Mr. Sprague's is the latest, it is also the most systematically and simply arranged. It has a graduated series of exercises with a key at the end of the book, which will enable a person who has studied no language except English, to master the subject without difficulty. It also contains appended a vocabulary which admits of a considerably extended range of Volapuk composition. As an exercise on comparative philology and the principles of language structure, the subject is interesting and worthy of attention. The grammar is so simple and symmetrical, that most of our readers, especially those who have studied the ancient classics, can master it at one reading. All that remains is to use the forms in connection with thought until they become associated with their meaning, then pick up the vocabulary and talk or write in Volapuk. We presume the work can be had from the author [illegible] the publishers [illegible]

[illegible]

[illegible] of the place. Hugh H. Hutchings, Esq., of Turk's Island, West Indies, an old Pictovian, has our thanks for the same.

MEIKLEJOHN'S GRAMMAR.—In the November issue of the REVIEW, reference was made to the admirable work on the English grammar and language by Prof. Meiklejohn of St. Andrew's University, Scotland. We are glad to learn that the American publishers of this work—Messrs. D. C. Heath & Co., of Boston—are about to bring out a re-print of the grammar in a separate form, with the addition of sixty-four pages of exercises and examination papers. This abridgment will prove a great convenience to those who wish the grammar and composition in a separate volume. What we have before said of the scope and value of this work, especially the complete volume, need not be repeated here. It is a course in English which teachers and students will find so admirably adapted to their needs, that it is safe to say the English language has been invested with a new and greater interest by the work of this distinguished English scholar.

SIXTY remaining copies out of 500 of that great work, "*The Survey of Western Palestine,*" in seven quarto volumes, are offered for sale at *twenty guineas each*, by Alexander P. Watt, 2 Paternoster Square, London, E. C.

COMMERCIAL LAW published by Williams & Rogers, Rochester, N. Y., U. S. A, from specimen pages which we have seen, appears to be a very complete and valuable work. Price $2.00. To schools $1.00. For introduction 75 cents.

GOSSIP WITH EXCHANGES.

The *Illustrated London News* (American edition published at New York) is not only noted for its admirable illustrations of men and events, but its literary matter, especially its notes and reviews, are terse and excellent. In its issue of Dec. 31st, the "notes of the week" are flavored with a wit and raciness that are charming. Let us appropriate a *multum in parvo* scrap from a running comment on the "art of conversation," which the writer discusses so charmingly: "To apply on the instant the treasure of the mind, with wit, to the passing topic is, indeed, the very perfection of the 'art of conversation.'"....The *Popular Science Monthly* (published by the Appletons, New York,) for January discusses "Governmental Interference with Production and Distribution," "Evolution and Religious Thought," "Race and Language," "Climate and the Lake Region," and other timely and valuable topics. Just as we close the volume, after a delightful hour spent on its pages, the following quotation in its "Miscellany" arrests attention: "Teaching and learning have been reduced to a mathematical system and work, with the regulation of machinery. Given so much room, so many pupils, so many hours, so many studies, so many pages of each, so many months in one department, so many in another; one class goes into the hopper at one end and goes out at the other." * * All, strong or weak, bright or dull, are "ground with the same burrs." * * "The average intelligence (of the pupils) is higher, no doubt, than when boys and girls, not classes, were taught; but are they individually as well equipped for the battles of life?".... *The Century* (published by the Century Company, New York,) for January has a portrait and sketch of Ruskin, a valuable article to students on the "Catacombs of Rome," the "War Series," with other valuable contents. Mark Twain's "Meisterschaft, in Three Acts," is a clever burlesque on certain popular methods of acquiring a foreign language. In "Topics of the Times" there is a valuable article on industrial education.... *St. Nicholas* (published by the Century Company, New York,) for January opens with a beautifully illustrated poem, "The Brown Dwarf of Rügen," by Whittier. Lieut. W. R. Hamilton describes how a girl's military company was formed in one of the western universities, the perfection of drill to which they attained, and the beneficial results as an exercise. "The girls," says the Lieutenant, "seemed to show a better natural capacity for drill than the boys. * * But to me the greatest pleasure was the thanks I received from the fathers and mothers, and from the girls themselves, for bringing the healthy color to their cheeks and the clear look to their eyes. And how those girls would walk! straight, and dignified, and graceful as young queens—it was a pleasure to see them move.".... In *Science* (Science Company, Publishers, New York,) of Dec. 30 is an account of the formation of the New Jersey Council of Education, which is somewhat of a novelty in educational organizations. It aims to "advance the educational interests of the State, chiefly by considering the means by which the policy of the State may be modified, in view of the progress of educational thought." It claims to be a working, not a talking body, and that is a very commendable feature in teachers' organizations.... The holiday number of *Wide-Awake* (D. Lothrop & Company, Publishers, Boston,) is a beautifully illustrated magazine for little folk, and its reading matter not only bright and interesting, but wholesome.... *Vick's Floral Guide* (published at Rochester, N. Y.,) for January is at hand. Its illustrations are on a magnificent scale, and the information it contains makes it invaluable to the horticulturist and gardener.... The *Academy* (published monthly by the students of Pictou Academy, N. S.,) is a bright little magazine of 16 pages.... The October number of *Spelling* (published by the Library Bureau, Boston,) has come to hand. It contains an outline history of the spelling reform up to date. Also a list of over 3,000 amended spellings recommended by the Ph. Society of London and the American Ph. Association, 1886. The magazine is 44 paged, and contains much information on the subject.... The Pictou *Standard* published a very superior Christmas number, which contained, among other illustrations, a cut of Sir Wm. Dawson of McGill, and of Principal Forrest of Dalhousie.... The scientific editor also acknowledges the receipt of the "*Naturalists' Bulletin*," Vol. I., No. 1, and the "*O logist*," Vol. III., No. 4, both from Albion, State of New York. The latter is bi-monthly, 50 cents a year.... The "*Jurnal of American Orthoepy*," Ringos, N. J., U. S. A., although printed in type strange to the most of us, is doing very important and valuable work in the art and science of English pronunciation.

N. S. COUNTY ACADEMY.

ENTRANCE EXAMINATION—OCTOBER 27th and 28th, 1887.

ARITHMETIC AND ALGEBRA. 10 *a. m.* to 12 *m.*

1. Express in Roman numerals 1589 and 1838, and write in words MDCCCLXXIX and 2043009.

2. Find the total cost of the following:

12	lbs of	Butter	@ 23 cts.	per lb.
18	"	Sugar	7½	"
11	"	Tea	35	"
25	"	Coffee	27	"
29	"	Rice	6	"

3. Define prime number, prime factors, composite number. Resolve 3366000 and 1155 into their prime factors.

4. A wheel 154 inches in circumference made 8459 revolutions in rolling a certain distance. How many miles did it roll?

5. Add together $\frac{7}{8}$ yd., $\frac{5}{9}$ ft., and $\frac{15}{16}$ in.

6. If a grocer were to sell at a profit of $15\,^\circ\!/_\circ$, tea which cost him 48 cts. per lb., how much would he receive for 85 lbs., and how much of this would be profit?

7. What is Commission? Brokerage? Sent my agent $3,654 with instructions to deduct his commission at $1\frac{1}{2}\,^\circ\!/_\circ$, and invest the balance in tea, how much did he invest and what was his commission?

8. A man sold $\frac{1}{3}$ of his farm and then 3–5 of the remainder. How much of his farm did he sell? If he received $1,210 from both sales, at that rate what was the value of his farm?

9. If $a=2$, $b=3$, $c=4$, $d=5$ and $e=6$, find the numerical value of the following expression:

$$\frac{a^2+b^2+c^2+d}{ab+c}+\frac{de}{b}-\frac{abc}{e}$$

10. Multiply x^2+xy+y^2 by x^2-xy-y^2.

11. Divide x^5-y^5 by $x-y$.

GRAMMAR, ANALYSIS AND COMPOSITION. 2—3.30 *p. m.*

1. Write in a plain hand, with due attention to punctuation and proper use of capitals, the passage dictated by the examiner.

2. Define *number* (in both nouns and verbs) and write the plural of the following nouns; *loaf, life, strife, wife, colloquy, goose, tooth, echo, grotto.*

3. Compare as many irregularly compared adjectives as you can.

4. Write the future perfect indicative passive of the verb *wind.*

5. Correct, where you think necessary, the following sentences: (1) There the mighty hero laid down to rest. (2) To you, as well as I, it was a great surprise. (3) Seldom has her friends received a warmer welcome. (4) "Not me, not me, but you," cried the sailor, "are guilty of this deed,"

6. Arrange the following verbs in two columns as *strong* or *weak*, giving at the same time the principal parts of each: *Wear*, *gnaw*, *shape*, *grind*, [illegible] *lie*, (*recline*), *lie* (*tell a lie*).

7. Analyze:

When the noble Cæsar saw him stab,
Ingratitude, more strong than traitors' arms,
Quite vanquished him.

8. Parse words in italics.

GEOGRAPHY. 9 *a. m.* – 10.30 *a. m.*

1. Name the zones and give their situation.
2. Write a note on the rivers of New Brunswick.
3. Give the location of the following places in the Dominion of Canada:—St. John, Winnipeg, New Westminster, Toronto, Three Rivers, London, Moncton, Hamilton, St. Catherines, Hull, Summerside, and Nanaimo.
4. Name the chief rivers of the United States, their direction, and the waters into which they flow.
5. Name the principal cities of Great Britain, and state for what each is noted.
6. On a voyage from London to Odessa, through what waters and near what headlands and islands would you pass?
7. Write a short description of the Chinese Empire.
8. State as fully as you can what you understand by the term Oceania.
9. Draw an outline map of Europe.

USEFUL KNOWLEDGE. 10.45 *a. m.*—12 *m.*

(Ten questions will be considered a perfect paper.)

1. Explain fully why we should pay particular attention to the ventilation of our houses.
2. Explain the formation of dew.
3. Name the principal fruits grown in Nova Scotia, and also give the chief spice plants and the countries in which they grow.
4. What are glaciers, icebergs, avalanches?
5. Explain what you understand by the term *gas*.
6. What is coal? lava? chalk?
7. What is the difference between gravel and sand, and what is their origin?
8. What are the following, and for what purposes are they used: Opium, quassia, strychnine, sumach, jute, vanilla, maccaroni, and sago?
9. Name the principal birds of prey (order *Raptores*) peculiar to this Province. With what order of mammalia are they compared?
10. Give a general description of an insect.
11. In what respects do the following pairs of animals differ: The camel and the horse; the lion and the buffalo; the dog and the sheep.
12. What is the difference between a plant and an animal?
13. Name the primary colors; what combinations of these produce the secondary colors?
14. Name the chief parts of a flower.
15. Mention the chief properties of the following: Oxygen, hydrogen, carbonic acid gas, nitrogen.

BRITISH AND CANADIAN HISTORY. 2–3.30 *p. m.*

1. Describe the character of any *two* of the following sovereigns:—William I., Edward IV., Richard II., William III., George I., Victoria.
2. In what reign did each of the following events occur:—(1) Defeat of the Invincible Armada; (2) Battle of Bannockburn; (3) Field of the Cloth of Gold; (4) Signing of Magna Charta; (5) Catholic Emancipation; (6) The South Sea Bubble; (7) Trial of Queen Caroline.
3. Name the chief events of the reign of Queen Victoria, with dates for the most important.
4. State what you know regarding the history of Louisburg.
5. Give dates for the following events in Nova Scotian history:—(1) Founding of the Provincial Normal School; (2) Brandy Dispute; (3) Joseph Howe's Governorship; (4) Passage of the Free Schools Act; (5) Establishment of Responsible Government in Nova Scotia.
6. Describe briefly;—(1) The Ashburton Treaty, (2) The Reciprocity Treaty; (3) The Washington Treaty.

[For admission to the Nova Scotian Academies, candidates are required to "pass" on five papers sent from the Education office. These are (1) arithmetic and algebra, (2) English grammar and analysis, (3) geography, (4) Canadian and British history, and (5) useful knowledge. At a late examination, a candidate after vainly struggling with a few of these elementary questions which every intelligent youth should know, finally closed up the paper with the endorsation, "I don't know any useful knowledge."]

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ALEX. ANDERSON, LL.D., Editor for P. E. Island.
G. U. HAY, Ph. B., Editor for New Brunswick.

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EDITORIAL NOTES.

WE beg to remind those of our readers, to whom time was granted for the payment of their subscriptions, that our expenses of publication are somewhat heavy, and we wish to meet them promptly. The careful and hearty support that has thus far been tendered the REVIEW by its friends, has made the task of its management a very pleasant one, and if they will assist us as far as possible in meeting our financial obligations promptly, we will endeavor to make the REVIEW still more worthy of their consideration and support.

McGILL UNIVERSITY, Montreal, has conferred the degree of LL. D., on Principal Anderson, of Prince of Wales College, Charlottetown. This honor, coming from the leading university of Canada, is a well-deserved tribute to one who has devoted his mature powers and a ripe intellect to the cause of popular education.

THE committee appointed to arrange the final details of the Inter-Provincial Educational Association will meet in a few days, and we hope in our next issue to present a general outline of the programme of the meeting. Several distinguished educationists of Canada will be invited to take part in the proceedings, and there are indications that the meeting will be an important one in our educational history.

THE lecture on "Socialism," prepared by Principal Forrest, of Dalhousie University, and delivered by him in Halifax and St. John recently, is not only an able refutation of certain mischievous principles of political economists, but is an instructive account of the growth of wealth among the people of these provinces. Dr. Forrest's facts are gathered largely from personal observation, and he presents them with a vigor that convinces one that he at least believes we have a country in which steady honest labor has a certain prospect of reward.

THERE is a power for good in a well-spent life. Its influence is not confined to one generation nor to one class in society. The example of a pure life and a steady sustained resolve outweighs, a thousand times, mere precept. Dr. Botsford, of St. John, who recently passed away at the ripe age of seventy-seven, was a leader of society in the truest sense of the term. Of him it may be truly said that he spent his life in doing good, and his influence was not confined to one class, but was felt by all—rich and poor, educated and uneducated, old and young. In public and private life his integrity of purpose and disinterested benevolence will cause his memory to be revered for many years to come.

THE attention of teachers in New Brunswick is directed to the following changes in Regulation 30 of the School Law Manual: (1) That there is but one station (Normal School, Fredericton,) for the examination of student-teachers; and (2) that a special examiner in reading has been appointed by the Board of Education, the more fully to classify candidates according to their attainments in this branch.

The seventeenth annual report of the Halifax School for the Blind has just been published. It records a year of progress and increased efficiency in methods towards improving the condition of those who are placed at such a great disadvantage with their fellow-creatures. The school is admirably conducted and is well deserving not only of public but private liberality.

In speaking of the resources of Newfoundland, Mr. Norman says in the *Pall Mall Gazette*: "For abundant evidence in justification of these optimistic forecasts let the reader apply to the Rev. Moses Harvey, F. R. G. S., of St. John's, the historian of Newfoundland, to whose exhaustive knowledge of the history and condition of this island, backed by the most patriotic devotion, every inhabitant and every visitor is under obligations, and myself not least so among the latter."

The St. Croix *Courier* referring to the Labrador Tea Plant described in the January number of the Review, says: "We agree with the Review's conclusion that, when the probability of securing a more healthful general beverage, and at the same time developing a new industry within our country is indicated, both science and patriotism suggest a patient and complete investigation of the facts."

Mr. W. F. Ganong's paper on the echinoderms of the Bay of Fundy, read this month before the New Brunswick Natural History Society, was a valuable contribution to the knowledge of these marine forms. Mr. Ganong pointed out that they are interesting objects of study, as illustrations of animal life and structure, especially in the lower forms. He urged teachers and students on the shores of the Gulf of St. Lawrence to endeavor to ascertain what species are to be found in those waters, in order that ampler information concerning their distribution may be furnished.

The Course of Instruction for Superior Schools in New Brunswick, drawn up by the Chief Superintendent and the Inspectors, will be found in this issue, and we direct special attention to it as it takes the place of the Course which by an oversight was published in the November issue of the Review. Both the Grammar School Course published in October, and the Superior School Course in this issue have been adopted for the present term by the Board of Education. In another column will also be found the proposed changes in the Common School Course which is of interest to the teachers of New Brunswick.

The teachers of Fredericton have made arrangements with Dr. Bailey to give a series of lectures in geology and botany during the winter and spring.

We have just received from the publisher, T. Fisher Unwin, of London, a volume of Addresses by the late Edward Thring, Head Master of Uppingham School, England. In the volume before us, and which we have had time merely to glance through, there is the address to the Teachers' Guild, published in the July number of the Review, through which was breathed the earnest spirit of this great teacher. The volume is edited by Sarah E. Thring, his daughter, and "is dedicated in fulfilment of the author's wish, to George R. Parkin, Head Master of the Collegiate School, Fredericton, New Brunswick, his fellow-worker over the seas."

Mr. Montague Chamberlain has conferred a boon on science by the publication of his catalogue of Canadian birds, which comprises all the species known to Canadian ornithologists. With but limited time at his disposal, but with an earnestness, an industry and a love for the work that no obstacle could overcome, Mr. Chamberlain has toiled patiently at his task. With that spirit that distinguishes the true scientific enquirer, he has delivered his work conscious that it has imperfections, but desirous that it may lead to a fuller knowledge of bird life and distribution in Canada. Since the publication of Mr. Chamberlain's list of New Brunswick birds, six years ago, he has seen the students of bird life in this Province rapidly multiply, and now in the greatly extended field, and in the many observers appealed to, there is a prospect of more systematic attempts to study Canadian bird life in the future. The taste shown in the arrangement and mechanical execution of the work is highly creditable to the author as well as to the publishers, Messrs. J. & A. McMillan.

At a recent meeting of the Montreal Natural History Society, the President, Sir Wm. Dawson, exhibited a cast of the new trilobite (*Paradoxides regina*) recently discovered by Mr. Matthew in the Cambrian of New Brunswick, and remarked on its great size and the importance of its discovery. He then read a paper on certain sponges discovered by Dr. Hanington in the Quebec group rocks at Little Metis, describing one of them as a species of *Protospongia* (*P. tetraneima*) and explaining its form and structure in comparison with other sponges recent and fossil, and the peculiar form of its root-spicules. He also referred to four other sponges found at the same locality, and belonging to four distinct generic types.

SCHOOL SAVINGS BANKS.

The Newcastle, N. B., *Advocate* makes some timely remarks on the subject of school savings banks. After referring to the introduction of the institution in the Dartmouth schools, mentioned in the January REVIEW, it records the adverse opinion to the system given by the teachers of Northumberland County at their Institute in October last, that objection being founded on the apparent violation of the spirit of the free school law by the tendency of such a system to place poorer children on an unequal footing with richer companions. The *Advocate* adds:

> "This, however, might prove to be a sentiment which would have no existence in the practical workings of the plan, and, like similar sentimental theories propounded at the time of the adoption of the school law as to the social disturbances that would result, be found only the creation of a prejudicial fear. The success of the trial at Dartmouth inclines strongly to this belief.
>
> "The importance of encouraging the principle of saving and economy in the child cannot be over-estimated, and any scheme that offers an intelligent training of children in this direction seems to deserve more than a speculative discussion. How much of success in life is due to the practice of economy! How many of life's sad failures are due to the violation of its principles. 'Economy is wealth.' It is more. It is the restriction of desire, the strengthening of character and the building up of a self-reliant robustness of mind that is a shield against temptation in all its forms. It makes thrifty and industrious citizens, and to a people who practise it generally it means social contentment and prosperity. It seems only to be necessary to consider the social evils the neglect of its principles entails to become convinced that it deserves a more active place in our educational system than that of theory or precept. The boy with a few pennies in his pocket who can be trained to run the gauntlet of the candy shops on his way to school is strongly fortified for the battle of life. It may not only develop a habit in him which is wealth itself, but be the means of giving him a start in life, a thing of great importance to ambitious boys. The School Savings scheme seems at least to be worthy a trial."

RULES OF THE DARTMOUTH SCHOOL BANK.

1. Deposits of One Cent and upwards will be received at the department in which the child is enrolled, every Monday, a. m.

2. The Money received will be invested in the Post Office Savings' Bank, on behalf of the above-named School Bank, in the names of the School Committee, being Trustees of the said School Bank.

3. Depositors may withdraw all, or a portion, of their deposits, on giving One Week's Notice, any Monday, the Deposit Book to be left with the Trustee in attendance.

4. So soon as the amount paid in by any depositor reaches $1.01, the Trustee will assist him to open an account, in his own name, for said amount in the Government Post Office Savings' Bank. As, however, no deposit of less than $1.00 will be received at the P. O. Savings' Bank, he may continue to pay into the School Bank as before, so long as he attends school, each additional dollar being in turn transferred to the P. O. Savings' Bank.

5. Any child who does not attend School at least four days in the week, except absent through illness, will not be allowed to deposit the following week.

6. Each depositor will be furnished with a Bank Book free of charge; but should it be lost, he will be charged three cents for a new one.

7. In the event of the death of a depositor, the amount to the credit of the deceased will be paid by the Trustees to the legal representative of the deceased child.

8. The books and accounts shall be audited quarterly by a person appointed for that purpose.

SEVERAL members of the N. S. Summer School of Science, which held a meeting of its Executive in Halifax last month, visited the regular weekly meeting of the Halifax Teachers' School of Science in the County Academy Building. Although it was the first meeting after vacation, a large number of teachers was present. Principal O'Hearn, of St. Patrick's School, was presiding, and Messrs. McKenna and Thompson were conducting a chemical demonstration on our entry. We found on further observation that the class was following a course of practical chemistry outlined on cyctostyled sheets by Supervisor McKay himself. The Association has also a class in drawing, physics and mineralogy this winter. The inspiring genius of this movement lays special stress on practical self-proven knowledge. All the work is designed to be practically demonstrative. Short addresses were made by the visitors bearing on the work of the Association. Prof. Eaton referred to the distinguished position taken by the Halifax teachers in the Nova Scotia Summer School of Science, and to the remarkable organizing genius of the Supervisor of the city schools. Prof. Hall and Principal MacKay also bore testimony to the value and high character of the voluntary work undertaken by the Halifax teachers for the purpose of enhancing the efficiency of their educational work. We have good reason to believe that no city in America has a more energetic and progressive staff of teachers than the public schools of Halifax. Our town and country teachers cannot afford to rest on the laurels of a bare B or C diploma, while the teachers of the metropolis are constantly studying. Try this association system.

A new English text-book of Volapuk has just been published in Milwaukee, Wis., U. S. A., by C. N. Casper.

TRURO KINDERGARTEN.

We enjoyed a pleasant hour the other day at the Truro Kindergarten. As we entered the dear little birdies were circling hand in hand on the floor, singing a charming, simple bird song, and keeping time with the piano. It was a little drama of music, motion and beauty-thoughts. Then they turned in to their little work tables. One set strung straw beads with thread and needle; another, small colored paper disks; while yet others were weaving checkered mats. Some little fellows tried drawing with chalk crayon on the low blackboards around the walls. Then the teacher took a small class sitting around their little tables in the form of a hollow square, showed them some pieces of calico, of various patterns. Some patterns were better liked than others. They would prefer to buy the prettier pieces. The difference was in the little ornaments, pictures or designs on the cloth. Now cannot the little ones make as pretty a design? A number of large and small rings which would come apart as half circles were next given them, to arrange in a given design. The little ones took up the idea, and they all formed the design from dictation simultaneously. Then more complex designs were dictated. It was interesting to note how difficult it was for some of the little ones to comprehend a described position, thereby illustrating the great mind developing nature of the exercise. We saw only a portion of the work, and feel the impossibility of describingeven what we saw. The school is what its name implies, a child's garden. He is shown the various colors, names them, and exercises his powers in distinguishing them. Many a man is as good as color blind for a lack of such training. They play with the cube, and from it they understand the properties of surfaces and lines. The cube is cut up in various ways, and they observe facts which High School students have been known to be unconscious of. Architectural forms are built up from simple blocks and the ideas of symmetry and æsthetics are called into play which gray-haired grandfathers could not exhibit. Melody of voice and trueness of ear, the poetry of motion and the aroma of good manners, the clearness of the eye and the deftness of the hand, are all simultaneously developed in a purposeful play, by a skilful hand and an intelligent mind. Such is Miss Woodcock, of the Truro Kindergarten. How handicapped must be the child whose opening faculties are left to be expanded in the kitchen or on the street, under the influence of minds and manners never themselves properly developed! What we want now is a young lady of good family with tact and good manners from every town in the provinces, to study the system under Miss Woodcock and introduce it at home. It would at first be supported principally by the wealthier people, who need it least. But its advantages would probably become so apparent that in due time it would be grafted on the primary school system for the benefit of rich and poor alike.

N. S. SUMMER SCIENCE SCHOOL, 1888.

At the last meeting of the Executive of the Nova Scotia Summer School of Science some changes were made in the staff of instructors. Prof. Smith, of the School of Agriculture, takes Chemistry; Prof. Eaton, Physics; A. Cameron, Esq., Principal of Yarmouth Academy, Astronomy; and Inspector MacDonald, M. A., Mathematical Field-work. Mr. MacDonald is an able and experienced surveyor. A couple of field demonstrations from him, showing how to use the theodolite in measuring angles, the level in leveling, the compass and the field-book, etc., will be an invaluable supplement to the trigonometry of Grade B teachers. A couple of surveys will be made and noted in field-book form, from which notes plans will be plotted. Principal Cameron, in addition to the study of the constellations, will show how to use the sextant in determining local time, latitude and longitude, etc. The opening address will be delivered by Professor Eaton, A. M., of the Normal School, in Convocation Hall, Pictou Academy, at 7.30 P. M., Monday, July 23rd. The school will close Friday, August 3rd.

A prize of $10.00 is offered for the best set of *home made apparatus* adapted for use in common schools to illustrate the principles of physics and chemistry. A prize of five dollars will be given for the second best set.

ARBOR DAY.

We hope that teachers are keeping in view an Arbor Day for the spring of 1888. It is not too soon to begin a plan of work for that day. A flying trip through many towns and villages of Nova Scotia and New Brunswick last summer, gave evidence to the writer of what has been accomplished during the past few years in the improvement and decoration of school grounds. Let the improvement be steadily progressive. Do not let the school grounds lie fallow for many seasons yet. What has already been done has had an influence for good that cannot be estimated.

In the Manual of the School Law of New Brunswick there is a provision for the observance of this day, which is as follows: "Teachers are hereby authorized, with the sanction of the Trustees, to set apart any Friday that may be deemed most suitable during the months of May or June, for the purpose of improving the school grounds and planting thereon trees, shrubs and flowers, such day to be known as 'Arbor Day,' and when duly observed credit to be given for it as a lawful teaching day." In another part of the Manual there are some excellent and practical hints on the improvement of school grounds, the selection of trees, etc., which are worthy of careful attention on the part of teachers and trustees. We hope that the forethought of the Board in making provision for the permanent observance of the day, with the excellent suggestions contained in the Manual, may meet with a ready and enthusiastic response from *all* the teachers of the province.

ON THE TEACHING OF HISTORY.

There are still some people who object to the inclusion of history in the common school curriculum. There are those who regard many of what are called the facts of history with considerable doubt and uncertainty; while there are others who, without any scepticism respecting the facts, consider that it is not possible to teach history so that it may be interesting, or become an instrument to call into exercise the higher faculties of the mind. To the former we need say nothing beyond the simple and indisputable fact that history abounds in materials about which there can be no question, and that even within the limits of the disputable, in consequence of the investigation of recent years, we can tread with a firmer step, and with greater confidence undertake the guidance of those who are committed to our care. With the latter we would acknowledge ourselves in perfect agreement were history to be regarded as consisting of the names of men and women, the dates at which they lived, the narratives of sieges and battles, leagues and treaties, and that the teaching of history is the memorizing of these facts. But if the history of a country is to be viewed as the life of the nation, the tracing of the gradual development of the people from a barbarous or semi-barbarous condition, the story of the early manifestation of those qualities which became their distinguishing characteristics, the recognition of these attributes as the special features of their most illustrious men, the indication of the sources of their weakness and strength, and the incidents of their periods of progress and misfortune, history becomes not only a fascinating study, but one of the most instructive which can occupy the mind.

It is a matter of little moment to the teacher whether the history of a country is the story of the lives of its great men, or that the men of "light and leading" are the product of the times in which they live. He will employ their names as convenient guides to aid him in arranging his facts. They are interesting to him in as far as they are identified with and are leading actors in great national movements. He traces from their earliest beginnings the national impulses and the train of incidents which betray their presence, and notes how, as time passes, they gain momentum and carry the nation, after many vicissitudes, into a region of strength and repose. Or it may be that he indicates the direction of social and religious changes (silent they may be but not the less certain) and marks the various stages of the revolution by the names of the leaders who gave character to and influenced it. The history of a nation is the narrative of the changes through which it has passed till it becomes what we find it to be at the present day. As when, in the case of a distinguished man, whose influence upon his age renders it worth while to inquire respecting the incidents of his life, we trace the agencies that moulded his character, the effect upon him of existing forces, and the part he took in directing them; so in the life of a nation, we mark the various steps by which it has arrived at its present position. In Great Britain, for instance, we mark the existence of constitutional government, a well-regulated liberty,—political and religious,—a social condition of the people advanced and fairly ameliorated, and a dominant and masterful spirit, which is, in spite of all efforts to the contrary, yearly compelling additions to her vast dominions. If boys were induced to look at the history of Great Britain as the history of the progress by which these results have been reached, of the struggles through which she has passed, of the disciplinary ordeal she had to submit to, which has given strength and stability to the national character, and of the patriotic statesmen and men of letters who were the representatives or the exponents of the national spirit, who governed kings and moved the people, it ought not to be the dry, barren and uninteresting subject it often is. Boys would find that there is a charm heretofore undiscovered and undreamed of in the study of history when prosecuted on this plan, and when additional light is cast upon a period by the perusal of contemporary records or the results of modern enquiry.

But the lives of great men are always specially attractive to young people. Every intelligent boy has his hero, and every girl too. The boys generally select such a man as Henry V., Richard I., or Robert the Bruce, while the girls prefer Alfred or Edward VI. These are characters the most diverse, and taken not so much because of their great benefactions to the state, but because they strike the fancy and arouse the imagination, either by their war-like deeds or their o'ermastering control of circumstances, or win the sympathy by their misfortunes, their reflective cast of mind and devotion to the arts of peace. In a country where religious instruction is banished from its schools, what an admirable opportunity has the teacher during the history lesson, to inculate high moral principles on the minds of his pupils! In king, statesman, or general, he has, prepared to his hand, characters in which he will find much to commend, and much to condemn; whilst he will have the opportunity of training the minds of the youth in tolerance and liberality of sentiment; in teaching them that times and circumstances greatly affect men, and that in forming our judgments of them, we must gauge them by the standards of their own times, and not by those of ours. Not that the great principles of truth, justice, and honesty suffer modification from time or circumstance, but that the conditions of birth, youthful training, and the environment of later years, demand for them a more charitable and generous judgment than is generally accorded to them. It is the duty of the teacher to place a lofty ideal before the minds of his pupils, but he must see to it that the illustrations or realizations of his ideal are true to fact, and that he has done his best in preparing for his portraiture, to procure from all sources within his reach, the most reliable materials which can be obtained. No lesson of the day will make such a deep and lasting impression on the minds of the pupils as a vivid and picturesque delineation of character, and none, we are sure, is more calculated to elevate the sentiments, ennoble the aspirations, and quicken and urge to vigorous and well sustained effort.

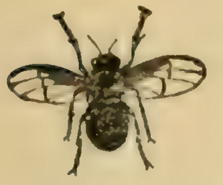
In the management of the details of history, the teacher ought to be and must be, systematic. In tracing the growth of the country, he should be able to represent, by maps, the country at different periods, the distribution of the population by noting the towns as centres of business or government, the cultivated and waste regions, and the opening up of its mineral resources. He must be able to follow upon the map, and present to his class all extensions, of territory, note the treaties by which they were ceded, and the resources which make such acquisitions valuable. Nor should he fail to make clear the course of every campaign, to point out upon the map, or, better still, mark upon the blackboard the battle-fields, and emphatically exhibit the causes of the wars, and their consequences upon the people and the country. And now and again it might not be amiss, on the occasion of some great and decisive battle, such as Bannockburn or Waterloo, to interest the pupils in the subject by describing minutely and illustrating by diagrams the disposition of the armies, and the various movements of the day, from the first onset to the final charge of the victorious army.

But what must be insisted upon as absolutely indispensable, is careful and intelligent preparation by the teacher. The day, we trust, has gone, never to return, when the teacher would stand before his history class, with the book in his hand, not simply for reference as occasion might demand, but that from it he might derive every question, and to it he might repair to verify every answer. He must, however, not only know the lesson of the day, but have reflected upon the best and most attractive mode of presenting it. He must be able by allusion and illustration to interest and impress, by a free and ready use of the blackboard, to rivet the subject in the minds of his pupils, and by a frequent and judicious recurrence to matters already treated, to stamp the principle of continuity on their views and impressions of history.

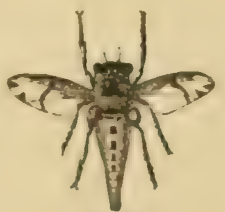
Nor should historical study be confined to the history of our own country or of our own race. If the mind is to be benefitted by such a pursuit, the history of nations that have passed away ought to divide our attention with that of those that still flourish. The history of the earlier civilizations in Egypt and Assyria, and of the later in Greece and Rome is most instructive, and contributes to our understanding of phases of life and manners, and on systems of law and polity, still unexhausted in the dark ages, and even transmitted to our own times. And as there was at these distant times scarcely a form of government which was not tried, it becomes intensely interesting to follow the history of each experiment and compare it with the results which have been reached in our own day. Moreover, human nature was much the same in the people of these countries as it is in us at the present time. The principles in action, though in different circumstances, were identical. So long as the people remained simple, truthful and pious, and were uncontaminated by the grosser forms of vice, they prospered; but when they abandoned themselves to the indulgence of their baser natures, when drunkenness usurped the place of sobriety, when luxury displaced simplicity and frugality, when greed, injustice, haughtiness, falsehood and oppression became the predominant features of their character, they fell. What more important lesson can be learned by any individual or any people? And surely at the present time we require to multiply precedents, to enforce the great and clear principle that truth, sobriety and honesty are the safeguards of a people,—that "righteousness exalteth a nation."

FERNDALE SCHOOL.

No. IX.—The Horse Breeze-Fly (*Œstrus equi*, Fab.)



Male.



Female.

Teacher. Here are the male and female of the Horse Breeze-Fly, or the Horse Bot-Fly, as some people call them. It requires more skill than angling to take them with the net. Do you think so?

Scholar. Yes, a good deal more, I should think.

T. Will you tell us why?

S. In hot days in July and August you may see them in numbers tormenting the horses in the pasture. They make the horses half crazy sometimes, so that you have to keep your eyes on their heels as well as on the fly.

Another S. It is quite easy to catch them sometimes when flying about horses in harness—that is, if your net won't scare the horse. They look hairy, something like small bees.

T. Well, let us describe its appearance. What is the color of its face?

S. Yellowish, with a whitish down.

T. Its eyes?

S. Blackish.

T. Its antennæ?

S. Rust colored, small and three jointed.

T. Its thorax?

S. Greyish, with fine hairs.

T. They belong to the class—

Chorus. Diptera.

T. Their wings are whitish with a golden tint, having a wavy band across them of—

Chorus. A blackish color.

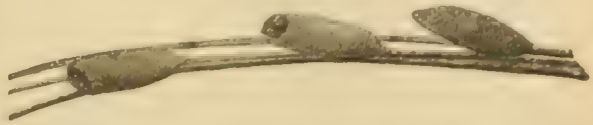
T. The abdomen is reddish yellow, with—

Chorus, Black spots and very fine hairs. But one is roundish and the other longer and tapering.

T. Very good. The one with the long tapering abdomen is the female—the one which torments the horses. When it comes near a horse it makes an observation, buzzing in an upright position as in our drawing, and coming slowly closer to the horse's shoulders, breast or legs, all the time preparing with its ovipositor at the tip of its abdomen, a small white conical egg covered with a sticky fluid. It then suddenly dashes toward the animal, and touches the egg to a hair, where it instantly sticks and hardens. The fly in the meantime goes away to get ready for another attack. How many of you have seen these little specks on the hair of the horse?

(Hands shown by a number of boys).

T. Here is a magnified drawing of two or three hairs with three eggs attached.



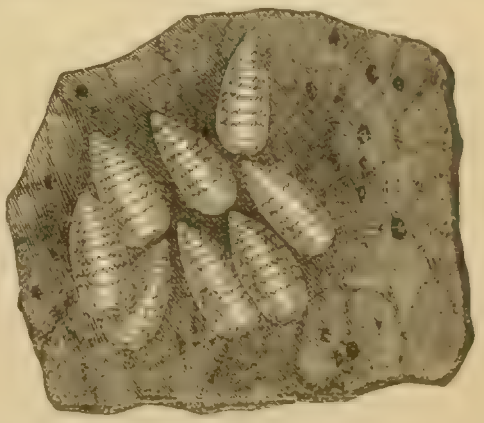
They are furnished with a small lid at one end. In a few days the eggs are ready to be hatched, and then the least warmth and moisture from the lips of the horse will take off the lid and bring out the—

Chorus. Larva.

T. Which sticks to the horse's mouth and is eventually swallowed.

S. Wouldn't that kill the larva?

T. It would kill the most of larvæ. But the heat and character of the horse's stomach just suit these exactly. As soon as the little grub is swallowed, it attaches itself to the coat of the stomach by means of two minute hooks.



This drawing represents them growing on a portion of the wall of the stomach where they are called bots. They pass the winter comfortably here, and if not very numerous are supposed not to be very injurious to the health of the animal. They are now of a whitish or yellowish red, and show eleven rings or segments with very small bristle teeth as in the drawing.

S. It is a wonder they are not digested.

T. Perhaps so. But they evidently think the horse exists for their special benefit. For when mature, they let go their hold and pass through the body of the animal, fall to the ground and change into the chrysalis with a hard dark reddish brown skin. After remaining torpid in this condition for some weeks, it comes forth as the perfect fly in June or July.

S. Are all the flies which trouble the horses breeze-flies?

T. Not by any means. There are others known as horse-flies and gad-flies, belonging to another division of the Diptera, which pierce and draw blood from horses.

S. Does the breeze-fly place its eggs only just where the horse can reach with his mouth?

T. Generally, but just as often on a portion of the shoulder, which a companion horse only can nibble at, as they generally do.

S. How can horses with great numbers of these bots be cured?

T. Well, what will kill the bots is likely to kill the horse, and a competent veterinarian should be consulted in such cases. The best plan is prevention. What would you propose?

S. To keep the eggs continually off the horses' hair, by combing, or scraping, or cutting the hair off.

T. Just what is recommended. Some use a wash of carbolic soap to kill the larvæ in the maturing eggs.

AMONG THE CONSTELLATIONS.

No. V.—Taurus.

As bees
In springtime, when the sun with Taurus rides,
Pour forth their populous youth about the hive
In clusters; . . . .
So thick the aery crowd
Swarmed and were straitened.
—*Paradise Lost, Book I.*

Many a night I saw the Pleiades, rising through the mellow shade,
Glitter like a swarm of fire-flies tangled in a silver braid.
—*Locksley Hall, Stanza 5.*

The three stars in the belt of Orion are about one degree apart. It is therefore a good yardstick for the heavens. If produced upwards in the direction of the Pleiades the line will first pass through a group of Stars in Taurus called the Hyades. The brightest of these, which is of a red color and of the first magnitude, is Alpha, or Aldebaran. The group is on the face of the bull. The Pleiades, consisting of six stars generally visible, is on the shoulder or flank. Some persons can see seven stars in this group. On a moonless night even twelve or fourteen have been seen without glasses. But such sight is rare. M. Wolf, of the Paris Observatory, has measured the positions of no less than 625 down to the fourteenth magnitude in this group alone. The brightest is called Alcyone, which by some astronomers has been considered the probable centre of our universe around which our sun and the fixed stars revolve. It is 150 times more distant from us than the nearest fixed star, light taking about 500 years to reach us from it. The probable time of the revolution of our sun and system around it has been put down at twelve million years. Beta of the second magnitude, and Zeta of the third, are near the tips of the horns, just on the border of the Milky Way. A vertical line drawn from Rigel through Bellatrix in Orion, produced its own length, will pass through Zeta of Taurus and a little east of Beta, which is three or four degrees further off. The sun will travel through this constellation in May, moving about one degree each day from west to east. It will pass between the Hyades and Pleiades, and between Beta and Zeta, about the end of the month and first of June. The zodiacal signs do not now correspond with the constellations, as they did nearly when first named about twenty-two centuries ago. A sign is exactly the twelfth part of the zodiac—thirty degrees. The sun enters the sign Taurus about the 20th of April, but it is then only in the constellation Aries, and will not pass within the boundaries of Taurus until sometime in May. This phenomenon is caused by what is called the precession of the equinox. This constellation is bounded on the north by Perseus and Auriga; on the east by Gemini and a portion of Orion; on the south by Orion and Eridanus; on the west by Cetus and Aries. The planet Neptune is at present in Taurus. Saturn is further east in Cancer, forming a triangle with Pollux and Procyon.

PLANETARY PHENOMENA FOR FEBRUARY.

Jupiter, Venus and Mars are morning stars, and are respectively in the following constellations about the first of the month, Scorpio, Sagittarius and Virgo. Jupiter rises about six hours before the sun near the end of the month; Venus about two hours and Mars about eight hours. Saturn is evening star, rising early in the evening in the east. It is in the constellation Cancer, and forms a triangle with the twin stars Castor and Pollux on the north-west and Procyon on the south-west. Mercury is evening star. He reaches his greatest eastern elongation on the 17th at 3 o'clock in the morning, and is then 18° 7′ east of the sun.

The eclipse of the moon, January 28th, was seen only in glimpses through the clouds in Nova Scotia.

The south wind breathed gently on the 31st January, producing a gorgeous display of feathery frost crystals on everything next morning—a fairy scene,

FERNDALE NOTES.

I.—Natural History of Coal.

1. *Woody Matter.* Wood, plants, mosses, etc. exposed to the air decay, forming vegetable mold, brownish or dark colored. (*Examples*—Decomposed logs from the forest).

2. *Peat.* Under water or clays these woody substances do not decompose so completely. Were the whole country to be covered with vegetable matter, say three feet deep, on the dry land, this layer would soon be wasted by the air so as to be very thin, while in the swamps it would lose comparatively little of its bulk. The accumulations of vegetable matter in bogs or swamps, which consist principally of a moss called sphagnum, are called peat. The latest made on the surface shows its origin more plainly; deeper down, the older material looks more like *brown* coal or lignite. (*Examples*—A few small specimens dried from neighboring swamps).

3. *Lignite.* Very old peat taken from great depths where it has been under great pressure is hard and brittle like coal, but it often has the brownish color of peat, and has sometimes not lost all appearance of its vegetable origin. (*Examples*—Not easily found, probably).

4. *Bituminous Coal.* Found in still older deposits, under old layers of rock and more completely mineralized. *Cannel* coal when heated, melts into tar or bitumen and gas, and produces much flame,—will burn like a candle, whence the name. *Caking* coal softens when burning, producing much gas and flame. *Non-caking* coal burns without softening. Woody matter, in being changed into coal, becomes from ten to sixteen times smaller in bulk. (Specimens easily obtained. Fossils in neighboring rocks showing presence of vegetation).

5. *Coke.* Is made by heating the above coals, not in contact with air. Cannel gives off from *forty* to *sixty-five* per cent. as a volatile hydrocarbon or inflammable gas. The remaining carbon which will produce a glowing live coal when burned with plenty air, but no flame, as there is no gas to burn, is called *fixed* carbon. Caking coal has less of the volatile and more of the fixed carbon; and non-caking coal, still less of the volatile and more of the fixed carbon. Coke contains only fixed carbon, (specimens obtainable from Stellarton, N. S).

6. *Anthracite.* Is natural coke, nearly all fixed carbon. Is generally hard, jet black and glossy in its fracture, makes a strong glowing heat without flame. The heat and pressure in its deep and ancient deposits distilled the volatile hydrocarbon from it. (Specimens easily obtainable from imported material.)

7. *Graphite.* Nearly pure fixed carbon in a powdery natural condition. The black lead of lead pencils, stove polish; found in still older rocks generally than anthracite.

Products of Natural Distillation of Coal.

1. *Gases.* Marsh gas or fire damp, and other similar gases. Sometimes imprisoned under gas-tight layers of rock extending for miles, and under tremendous pressure. When the rock is drilled through, it escapes sometimes with the force of gas from a gun.

2. *Oils.* Petroleum, kerosene, or mineral oils, generally found in the same subterranean cavities as the gases; a number of oils mixed in all proportions, some of them gaseous at ordinary temperatures. These have to be distilled off to make the oil safe for lamps.

3. *Paraffines.* Solid, wax-like, white and translucent. Found dissolved in the petroleums, etc., above mentioned. All mineral gases and oils do not necessarily originate from coal. Some are of animal origin and some of direct chemical origin, probably.

4. *Asphalts.* Called also bitumen, and mineral pitch. Found about Dead Sea, in Trinidad as a lake, in South America, California, England, Switzerland, Sweden, Caucasus, etc.

5. *Albertite.* Found first in and named from Albert County, New Brunswick. Is a solid asphalt, like cannel coal in its properties, only that it has a shining jet black glassy fracture, and is not dull black like cannel. Found in pockets into which it may have flowed from bituminous coal, distilled locally, perhaps by the subterranean heat from the tremendous volcanic furnace which poured out the huge ridge of mountains now ending at Blomidon.

SPELLING REFORM.

The *Halifax Critic* says: "It does not look quite so hideous as most illustrations of orthographical reform, and might furnish a hint here and there for brevity of spelling. But what is required is what the Spaniards have,—a revising college of the language, whose decisions would carry weight."

Spelling reformers must bear in mind that nothing can be gained by the present generation from reform. We can expect only some inconvenience and occasional twinges of sadness at the disappearance of expensive, eccentric, but well loved forms. Reformers are working for posterity; and a reformed spelling would save at least two solid years of useless and demoralizing cram for 100,000,000 English scholars in one generation, and soon make it the universal language.

For the Review.]

EXAMINERS AND THEIR PAPERS.

> "But for fear that every examiner who reads this may complacently suppose that these qualities belong, in an especial degree, to him, it may be said that quite another species of examiner is abroad, and a strong protest should be entered against the absurd and meaningless questions that are too often put forth as tests (?) of pupils' efficiency, both in the elementary and higher grades, by examiners who appear to think that it is their special function to puzzle and confuse the pupil," etc.—Review, January.

Thanks, Mr. Editor, for your plain outspoken truths. A very strong protest should be made by all the teachers against the papers usually set for examinations. Almost every month papers are published in the daily press which call forth the execution of your suggestion. It is not to be wondered at that so many candidates are "plucked." We might select from almost any paper on every subject in the courses of study of every school or institution. We have at hand quite a number of examination papers for academies, the teaching profession, and for the civil service.

Let us take the following: "Write the plural of the following nouns: *loaf, life, strife, wife, echo, grotto, potato, negro, piano.*" We are taught that, with a few exceptions, the plural in English is formed by adding *s* to the singular. The above do not belong to the general rule. Some belong to the exception, "That nouns ending in *f* or *fe* change *f* or *fe* into *ves.*" Some belong to an exception to this exception, all of which is contained in very fine print in most text-books, as if less prominent than the general rule; yet these words are trotted out to test a pupil's knowledge of number as applied to nouns. Again, take the words "negro" and "piano." One of these follows the general rule, the other follows a rule which was formed so as to facilitate its pronunciation, and takes *es.* Now why should any examiner select such words as these? Certainly, as you say, to confuse the pupil. But will any examiner inform your readers why the plural of *negro* should be spelled *negroes,* and *piano pianos,* or that *grotto* be spelled *grottos* (which is the most sensible method) and *echo echoes?* Will he explain why there should be any exception to the general rule of adding *s* to the singular save where the pronunciation demanded it, as in such words as "match," "box," etc.? Will he also inform us why nouns ending in *y* preceded by a consonant, change *y* into *ies* to form the plural. Surely it is not for pronunciation. Bain, in speaking of those words ending in *o* that take *es,* also of nouns ending in *y,* says, "This is a mere caprice of spelling and not a proper inflexion or modification of the word." Then, in our humble opinion, the above question is not a test in English grammar as intended, but a test of the pupil's memory of a "mere caprice of spelling." Perhaps the "Spelling Reform Association" will improve this part of our text-books in grammar.

Again, here is another: "Define grammatical gender." Is this of so much importance as a test of a pupil's knowledge of this inflection of a noun? Are we expected to speak of a noun in the *grammatical* gender when we are parsing it? In old English, as in Latin, gender was often determined by *the form* of the word and not by *its meaning*; but is there any necessity of dragging needless forms into our modern English, simply because they belonged to ancient times? This, too, might properly come under the head of spelling, as it has to do with the form of spelling these words. Why not ask the pupil to define "poetical" gender?—to define "grammatical" case? With the exception of the possessive case nouns have no variation in the nominative case from that of the objective case, each being distinguished by its grammatical relation to other words in the sentence.

Take another example. "Youth is sometimes called the *springtime* of life,"—parse "*springtime.*" A rule generally given in our text-books is "transitive verbs in the *active voice* govern the *objective* case." Pupils are continually drilled in this rule until by inference they begin to think that verbs in the passive voice have nothing to do with the case of nouns related to them. There is no rule to explain the case of nouns positioned as 'springtime,' and the word John in the following, "He was called John," but in some fine print, being perhaps the last exception to some general rule, the case is explained. Now, are such sentences a *fair* test of a pupil's knowledge of grammatical rules, or is it only a test of their memory of exceptions couched in very fine print? As a rule, it is acknowledged that the fine print of most any text-book is not to be studied so thoroughly as the coarser print, which is supposed to contain the more important points. The above sentence was given in a pass examination to pupils from eleven to thirteen years of age, where seventy per cent. was required to *pass,* and "springtime" was the only word governed by a verb required to be parsed. But, we would like to ask if it is the design of those who make out the papers that in parsing *every word* should be parsed in all of its ramifications; if so, then sufficient time should be given. Is it really necessary that such be required to test grammatical knowledge or skill in writing good English? In our paper before us are eight questions, the last one contains fourteen words to parse. To do this in full and correctly, according to the usual forms, would take at least more than half the time given to the whole paper. What was the object in view in this case? Another point frequently complained of is this: An examiner declines to accept, on equal terms, the parsing of two candidates, one of whom uses the ordinary paradigm, where the other simply parses each word correctly on the page of his paper, as if he were writing a definition; the latter's papers are marked low, because the examiner has a preference for the ruled forms, where, as in every other respect, the papers are equal. But this marking or per centage business is no reliable standard of any pupil's knowledge; neither is it, as some think, a proof that teachers are not doing good work. Judging from some leading educational papers, it would appear that to pass examinations was the highest aim in education, and when a candidate failed to pass then his teacher was to blame, as if the pupils had nothing to do for themselves. The fact is that teachers do too much to urge their pupils through the prescribed course, and the result is that too many of them have very hazy ideas of the work gone over.

If examiners would adapt their questions to the age of the pupils, and not give children work that would demand the more developed minds of young men; also to give either fewer questions or more time, then there would be less ground for complaint and more encouragement to do good work. Too often examiners exceed the limits required by the syllabus, and thus both teachers and pupils are disappointed. Written examinations should never be made the sole test for promotion from a lower to a higher grade, or from the common to the high school or academic department. Many of the leading schools in the United States have been modified in this respect—the pupil's record is now being taken into account. Seventy per cent. was the standard to pass for promotion in an examination; a diligent, hard-plodding, study-loving pupil made $69\frac{9}{10}$ per cent., and was plucked on questions more difficult than most papers for license D, with this difference: candidates for academies, as a rule, are from eleven to thirteen years of age, whilst candidates for the teaching profession, are, if females, sixteen years; if males, eighteen years. Age seems to be lost sight of when papers are being set for juveniles.

We have some very good specimens of questions for high school entrance recently given. In history there are seven questions for English, and four for Canadian history, only *four* of the former and two of the latter are required. This gives the youthful candidate a chance to succeed, but when he thinks he is required to answer *all* the questions he is worried into a nervous state, which too frequently is the real cause of his failure. B.

For the Review.]

A NEW TEXT-BOOK OF CHEMISTRY.

A good indication of the increasing interest taken in scientific study, and of the increasingly important part which the latter plays in our modern educational systems is the number of text-books prepared for the use of *beginners*. The methods, moreover, adopted in the preparation of such text-books are beginning to show more and more the recognition upon the part of their authors of the true aim of studies of this kind, viz.: not so much to store the mind with multitudes of facts, however useful, as to lead the mind to see for itself how facts are gathered, to estimate their relative bearing and value, to test their accuracy, and then to give to students such powers, both of thought and observation, as will enable them to consider intelligently the manifold problems which our modern life is continually presenting to them.

A text-book in which this feature is somewhat markedly seen, and which has recently been brought to our notice, is that of the elements of chemistry, by Prof. Ira Remsen, of the Johns Hopkins University. Though written by one connected with what is justly regarded as one of the most advanced institutions of the continent, and one especially devoted to original investigation, it is just what it professes to be—a work for *beginners*—and as such, is at once clear, simple, attractive and systematic; not attempting to cover too much ground, but yet bringing before the young student all that is essential for a correct general appreciation of the subject. But the volume has another merit quite as important as any of these, viz.: its *suggestiveness*. Without telling everything, it leaves much to be inferred from the facts observed, and by the mere asking of questions leads the student to experiment and find out for himself what it is desirable for him to know. Similar questions scattered through the text but not answered, suggest comparisons between the subject in hand and others which have gone before, and perhaps been forgotten, and so the student is constantly reminded of what he has previously ascertained, and led to test for himself the extent and accuracy of the knowledge he possesses. Moreover, he can hardly fail before long to acquire the *habit* of questioning for himself, and this questioning habit is the one upon which all true progress in knowledge rests.

We have been led to make these remarks because the advent of such books seems to mark a new era in the methods of science teaching, and hence, can hardly fail to be of interest to those, who, in the future, may be called upon to undertake work of this kind. To all such we would heartily recommend the little volume in question. It is of small size and very neatly printed, being simultaneously published in London and New York by MacMillan & Co.

L. W. Bailey.

Fredericton.

For the Review].

BANDS OF MERCY.—S. P. C. A.

Teachers often become discouraged in dealing with a certain class of pupils whom it appears difficult to interest in ordinary branches of study; there is a dullness of perception and perhaps often a lack of interest in their work. That this does not proceed from want of intelligence is shown by the fact that when their minds are awakened by some new and interesting object of study we frequently find them developing powers, the existence of which was little suspected.

What will best tend to arouse these dormant abilities? Some branch of natural science is eminently adapted for this purpose, and this can be most easily done by directing the attention of the scholars to habits and peculiarities of various animals, and this will not only develop a love for God's creatures, which is of great value in refining the character, but will also be of benefit in arousing general intelligence and quickening the mental powers when required to grasp other subjects of study.

The "Ferndale School" gives admirable lessons about the insect world, and it is impossible to say how much good has already been done by awakening an interest in the varied forms of insect life by which we are surrounded. The study of birds and animals in their native haunts, though delightful, is not within the reach of any large number of students; but to observe intelligently not only the habits but the character of the domestic animals is within the reach of all. It has been found that a great impetus has been given in this direction by the formation of Bands of Mercy, which, apart from the primary object of binding children to show kindness to animals, tends to develop an interest in and love for all living creatures, and the voices and gestures of "animated nature" thus become an open secret to all who observe closely and reason intelligently on the subject.

Eastern legends delight to chronicle the wonderful achievements of King Solomon, and among these there are few that are more fascinating than those which relate his ability to interpret the speech of beasts and birds. In the later years of this world's history we may, in this respect, emulate the wisdom of the wisest of kings. If we will but listen, beast, bird and insect may speak to us in ever clearer and more intelligible tones. Cowper tells us of one, doubtless himself, to whom

> Birds of all feather, beasts of every name,
> Who serve mankind or shun them, wild or tame,
> The looks and gestures of their griefs and fears
> Have all articulation in his ears;
> He spells them true by intuition's light,
> And needs no glossary to set him right.

This thought was suggested to his mind by a very simple incident. He observed a flock of timid sheep, startled by a sudden sound, rush wildly round the field, and were apparently just about to precipitate themselves into an old quarry to escape the threatened danger, when they were arrested in their headlong course by a wise old ram who stationed himself directly in front of the pit and appeared to be expostulating with them on the absurdity of rushing into certain danger to escape a fancied evil.

Many stories have been written illustrating the nobility and devotion of what we call the *lower* animals, but perhaps we are too prone to overlook the manifestations of the finer feelings which, no doubt, they share with the human race.

All will recall Landseer's well-known picture, "The Highland Shepherd's Chief Mourner," where the utter abandonment to grief and despair shown by the dog, as he rests his head on the rude coffin containing the form of his beloved master, forms a noble subject for the painter's art. Edgar Quinet, in his *Journal*, relates a striking incident which shows that the power of sympathy, one of our noblest gifts, is not confined to mankind alone. He thus describes a visit to the Jardin des Plantes, accompanied by the naturalist, M. Geoffroi de St. Hilaire. "In one of the cages were a lion and a lioness standing quite motionless, not even seeming to see us. Presently the lion, lifting up his great paw, placed it slowly and softly on the forehead of the lioness, and both continued in the same attitude as long as we remained before them. What was intended by the gesture? A painter who desired to represent calm grief and the deepest compassion could not have invented anything more striking. 'What does it mean?' said I to Geoffroi. 'Their lion cub died this morning,' replied he. Then I understood what I saw; pity, good-will, sympathy, all those sentiments might be read in those fierce countenances."

It is not necessary to visit a menagerie to witness such exhibitions of feeling; our own domestic animals would show the same tender love and sympathy, but we check the manifestation of it by our utter indifference.

I have seen a spaniel, who, though not allowed in the house, would watch till his invalid master was able to sit on the veranda, then keeping as close to him as possible, would every little while raise his paw and lay it gently on his master's knee, gazing lovingly into his face, expressing as plainly as if in words, sorrow for his changed countenance and wasted form.

A little girl who possessed a very sensitive nature, possessed also a very sympathizing cat. Whenever her little mistress, wounded in spirit, retired to weep in secret, pussy would search till she found her, and nestling close to the hidden face, she mewed in sympathy, till the grieved little soul was comforted, and with peace in her heart and pussy in her arms, the child returned to the family circle.

The interpreters of nature,—the poets—have not overlooked this aspect of the truth. Mrs. Browning tells us of the soothing influence of Cowper's pets, on the mind of their unhappy master.

Wild, timid hares were drawn from woods to share his home caresses,
Uplooking to his human eyes with sylvan tendernesses!

Wordsworth finds his joy increased by contemplating theirs.

"Ye blessed creatures, I have heard the call
Ye to each other make,
My heart is at your festival,
The fulness of your bliss I feel—I feel it all."

With what fine effect does Coleridge in his "Ancient Mariner" bring before us the bond that unites man to the lower animals. The Ancient Mariner cruelly and in contempt of the laws of hospitality, kills a huge bird of the southern seas, which had taken refuge on the ship. A mysterious vengeance follows, which is prolonged through unmitigated horrors, till he is left

"All, all alone,
Alone on a wide, wide sea;
And never a saint took pity on
My soul in agony!"

The spell begins to break when he beholds the bright creatures of the deep, and there springs up in his heart a sudden sympathy with the happiness of the animals floating in his sight.

With what a thrill do we read of the melting of the heart that was as 'dry as dust.'

"Oh happy living things! no tongue
Their beauty might declare;
A spring of love gushed from my heart,
And I blessed them unaware;
Sure my kind saint took pity on me,
And I blessed them unaware."

He is now able to pray, and with the prayer comes

"The gentle sleep from heaven
That slid into my soul,"

and with lightened penance he is at length brought safely home to "his own countree," where he wanders about telling his terrible tale, the burden of which is—

He prayeth well who loveth well
Both man and bird and beast,
He prayeth best who loveth best
All things both great and small,
For the dear God who loveth us,
He made and loveth all."

E.

St. John.

SCHOOL AND COLLEGE.

Work on the new building of the University of Dalhousie College is still going vigorously on. The magnificent accommodations provided for scientific teaching will place this University ahead of many of the famous older universities of the world. The physical and chemical laboratories and lecture rooms are most admirable in design and arrangement, and even sumptuous in general aspect.

The Halifax Ladies' College under the energetic and able direction of President Laing and Secretary McKay, has risen with nearly the speed of magic. The location is one of the most beautiful and convenient in Halifax. The dormitories are perfection for neatness and comfort. Heating and ventilation are effected by the latest and best approved methods and are very efficient.

The attendance at St. Francis Xavier College is quite large during the present term. It is ahead of many of our colleges in looking after the good of the physical man, as its new gymnasium building attests.

Acadia College is making preparations for the due celebration of its jubilee year. Professor Coldwell writes to the provincial papers correcting the ascription of the honors of the Star of Bethlehem to Venus.

The School of Agriculture is keeping agricultural thought in motion. A "Farmers' Institute" was held in Truro last month. Col. Wm. Blair, the President, Gen. J. W. Laurie, M. P., R. C. H. Starr, Esq., W. D. Dimock, B. A., Jas. Norrie, Esq., and F. A. Lawrence, Esq., took a prominent part in the proceedings, as did Principal J. B. Calkin and Dr. Hall of the Normal School, and Professor Smith of the School of Agriculture. Professor Smith is the Secretary and efficient mover in this important work.

PERSONAL NOTES.

Mr. W. J. Wilson, of St. John, who is a student in the Illinois Wesleyan University, recently received word that his herbarium of one hundred New Brunswick plants, recently forwarded, was the best collection received in five years.

Mr. N. W. Brown has been appointed to the Principalship of the Milltown, N. B., High School. We congratulate Mr. Brown on his promotion, and the people of Milltown in securing the services of an energetic and capable teacher.

The death of Miss Addie Hanson, of Bocabec, N. B., an estimable lady and teacher, will be heard with regret.

Principal Grant, of Queens College, Kingston, who recently undertook to raise a quarter of a million for his college, has already secured the amount to within a few thousand dollars.

Frank M. Kelly, M. A., who was for two years principal of the Sunbury County Grammar School, died on Jan. 27th. He graduated from Acadia College in '84, and took the M. A. degree in '87. He was a young man of scholarly attainments and good ability.

Mr. Archibald Troop, son of the late Hon. J. C. Troop, of Annapolis Co., N.S., a fourth year student in the Pictou Academy, has received the appointment of English Master in the *Instituto De Chili*, Santiago, South America. Rev. Duncan Cameron, of Canisto, New York, a Pictovian also, held the same position with credit some years previously.

D. A. Murray, B.A., late Munro Mathematical Tutor in the University of Dalhousie, has been awarded a fellowship in the Johns Hopkins University.

Professor Lyall of Dalhousie University, author of "Intellect, the Emotions and Moral Nature," has broken his left arm and foot by falling on the ice. His place will be taken for the remainder of the college year by Professor Seth.

Professor Asa Gray of Harvard, the greatest American botanist, died at his home, Cambridge, Mass., U.S.A., January 30th.

Rev. Dr. Brock, President of Kings College, has returned from a five weeks' visit to the United States in the interests of the University. He has received from the friends of Kings in Boston, New York and Brooklyn, about $5,000.

The *Colchester Sun* publishes a good cut of W. D. Dimock, Esq., B. A., President of the new Truro Temperance Society. Mr. Dimock was formerly principal of the Truro High School, and later Commissioner for Canada at the Colonial and Indian Exhibition, London.

David Allison, Esq., LL.D., Superintendent of Education for Nova Scotia, has read a paper before the Historical Society on the early census of the Province, which has elicited high praise from the press.

Sir Hugh William Hoyles, ex-Chief Justice of Newfoundland, died on the first inst., aged 73. Sir William was a native of St. John's, but was educated at the old Pictou Academy and was a classmate with Sir William Dawson. In 1838 he was called to the bar. In 1854 he was appointed acting Solicitor General of Newfoundland, and in 1865 became Chief Justice until he retired in 1880. He was knighted in 1869.

Inspector Lay, of Amherst, has been presented by the teachers of his district with a complimentary address and a valuable silver tea service consisting of a large number of pieces. The teachers of Cumberland and Colchester are to be congratulated on their having so energetic and successful an Inspector; and the Inspector is to be congratulated in having teachers who can appreciate such work and signify it in so very handsome a manner.

Mr. George Frost died at his native place, Argyle, N. S., on the 25th of January. He was well known as a successful teacher, having taught in the rural districts of Yarmouth County for the past forty years. In 1874 he published a small volume of very pleasing verse, entitled, "Man and Nature, or Evening Thoughts."

Mr. Colin H. Livingstone, M. A., of New York, has offered a series of prizes, to be competed for in the schools of St. John and Portland; the chief of which is the Coster Memorial Prizes, open to pupils in the Grammar School and the Girls' High School. Mr. Livingstone's interest in the schools of his native county should be an incentive to ambitious students to follow in the footsteps of one who gained such high honors in his university course.

Mr. Peter Jack, cashier of the Peoples' Bank, Halifax, whose death is announced, was a gentleman of considerable literary and scientific attainments, and was especially a diligent and enthusiastic student of ferns, devoting considerable attention to their cultivation.

UNIVERSAL LANGUAGE.

We have received some letters in Volapuk; but we wish to say that *we* correspond much more fluently in English.

So simple is this wonderful language in structure, and so familiar are its roots, that it is very easily and quickly acquired. Already it has gained wide favor upon the continent, and is rapidly proving its practical usefulness. In many business houses in Paris a placard bearing the word "Volapukon" (here they speak Volapuk) is diligently displayed, while its professors and teachers are numerous and enthusiastic.—*Hartford Times.*

But English is undoubtedly susceptible of modifying simplifications which would easily and perfectly fit it for international use. Let a committee be appointed, consisting of one British and one American member, to investigate the subject, and suggest such changes as would remove anomalies, and I feel convinced that they would readily create a new and simple tongue in the form of what may be called "World English." This seems to be the most hopeful direction in which to look for universal language. —*Alex. Melville Bell, in Science.*

EDUCATIONAL OPINION.

Compulsory education, which, while nominally recognized, is a dead letter, should be enforced, as the state as a matter of self-protection should educate her children into intelligent citizens. The rod is necessary, and will be until the millennium. The demand for an increased number of studies is another evil. We are getting away from the ideal of education, and as a result, are getting admirably informed men and women instead of comprehensive thinkers; tools of society, instead of its masters and guides. The cry of the age is "teach us how to make a living," instead of "teach us how to live.".—*Supt. F. H. Clark, before Kansas State Teachers' Association.*

No live teacher will allow a winter to pass without doing some work for his own growth. *What* work each should do will depend upon what he needs. He who is backward in language should make that a study; so, also, with all the common branches.

All teachers should read more or less each week, in a book or books on teaching. The manner of reading these books is very important. It is not wise to simply read a book through consecutively, and then lay it aside. Better to read it topically. If some light on class recitation is required, look up that subject and test what is taught by putting it in practice. If your plan of teaching geography is not satisfactory, look the subject up in your books on teaching, and *put in practice* what you find suitable. In this way books will be read with interest and profit.

BOOK REVIEWS.

An Elementary Treatise on Kinematics and Dynamics: by J. G. MacGregor, M. A., D. Sc., F. R. S E and C , etc., Professor of Physics, Dalhousie University, Halifax. London and New York, MacMillan & Co., 1887. This is a work of over 500 pages, of good typographical appearance, and of rather more advanced character than the student of our average provincial college would suppose it to be from its title. It is divided into two parts: (1) Kinematics (184 pp.), which treats of Position and Motion, Translation, including Paths, Displacements, Velocities, Accelerations, Motion under given Accelerations; Rotation; Motion of Rigid Systems; and Strains. (2) Dynamics (320 pp.), which treats of the Laws of Motion; Dynamics of a Particle; of Simple Systems of Particles; of Flexible Inextensible Strings; of Extended Bodies; of Rigid Bodies; and of Elastic Solids and Fluids The special characteristics of this work, as it strikes us, is its accuracy and conciseness of definition, its severe unrepeating logical progression, and the neat symbolic notation or expression of abstruse mathematical conceptions. It is a book to captivate the amateur or professional physical mathematician, though its fascination might prove to be negative to the simple degree hunter. Its use as a text-book in Dalhousie proves that in this department at least the Nova Scotian university can rank with some of the most famous in the world. Professor MacGregor, whose works are better known in British and Canadian scientific circles, is well known in this country as a forcible writer, a well read and all round scholar, and an able advocate of educational reform. The present work marks him out as one of the ablest scientific thinkers which our Dominion has produced, and will reflect no little lustre on the university in which he is a professor.

Introduction to Physical Science, by A. P. Gage, Ph. D., Instructor in Physics, English High School, Boston, and author of "Elements of Physics." Published by Ginn, Heath & Co , Boston. This is a re-written and very much improved edition of the "Elements" already prescribed for the high schools of Nova Scotia. The motto of the work is "Read Nature in the Language of Experiment." The laboratory is the place in which to study physics, and we have seen no work so well designed to introduce the student to the science in the only proper—the practical—way, as this one of Dr. Gage's.

The Elements of Chemistry. A text book for beginners, by Ira Remsen, Professor of Chemistry in the Johns Hopkins University. MacMillan & Co., London and New York. This work of 260 pages contains a course in inorganic and organic chemistry adapted to the wants of pupils in our high schools and academies. Theory is subordinate to experiment, and the aim constantly and persistently followed throughout the work is to teach students to reason and observe, to lead them from step to step, to make the study of value as mental discipline as well as to teach them practically the elements of a most important subject.

The Souvenir, published by A. S. Barnes & Co., New York, illustrating their system of penmanship, is a marvel of beauty and skill.

University Degrees, their meaning and how to use them, is a valuable little pamphlet published by C. W. Bardeen, Syracuse, N. Y.

A Treatise on Commercial Law, by Williams & Rogers, publishers of commercial text-books, Rochester, N. Y. This excellent work, to which we have referred in a previous issue, is admirably adapted not only for commercial schools and business men, but for teachers of arithmetic in the common schools. With this book of reference constantly at hand, an intelligent teacher can invest the ordinary business rules of arithmetic with an interest and value which will be of the greatest importance to pupils as a preparation for their occupations in life.

A Quiz-Book on the Theory and Practice of Teaching, published by C. W. Bardeen, Syracuse, New York. This is an altogether unique book on practical teaching. It is made up of a series of questions and answers on every conceivable subject with which the teacher is called upon to grapple. The almost numberless plans and suggestions made in this excellent work for the government and conduct of a school are worthy the attention of educators.

Monographs on Education. The continuation of the series of monographs on education by D. C. Heath & Co. of Boston, so admirably begun, will be cordially welcomed by teachers. The two recently published—"English in the Schools" and "English in the Preparatory Schools"—are admirable little works, stimulating and directing to a better understanding of the English language and newer and more improved methods of teaching it. We shall have occasion to refer to these again.

Other books received will be noticed in next number.

EXCHANGES.

The Microscope, an illustrated monthly journal devoted to microscopical science, edited by W. P. Manton, M. D., F. R. M. S.; Frank W. Brown, M. D.; George Duffield, M. D., and Charles G. Jennings, M. D.; and published by the Microscope Publishing Co., 25 Washington Avenue, Detroit, one dollar per annum. Nothing better ever published in microscopy for the price.... The *Health and Home Library* is published quarterly at $1.00 per annum by the Health and Home Library Publishing Company, Chicago, Ill. The initial number is at hand and takes high rank as a family magazine. The several departments, — literary, health, home and editorial,—contain valuable and instructive reading matter for the family circle.... *St. Nicholas* for February is at hand, and is brighter and more interesting than usual for children. "The Story of an Old Bridge," (Old London Bridge) is finely illustrated, and gives a series of brilliant scenes and pen sketches from history.... *The Swiss Cross* for January and February are excellent numbers. In the latter, Prof. W. W. Bailey commences an interesting sketch of Linnæus. The *Swiss Cross* is the monthly magazine of the Agassiz Association. The only Chapter for the lower provinces from which we have seen reports is that at St. Stephen, N. B., whose Secretary, Mr. J. E. Ganong, reports a healthy and increasing interest in objects of the Chapter. .... *The Illustrated London News* has added to its attractions for the New Year by publishing an illustrated serial story by Wm. Black, entitled, "The Strange Adventures of a House Boat." In the last number (Jan. 31), there is a finely illustrated sketch of "Penshurst," the home of Sir Philip Sidney. .... *The Century* for February has a portrait of Walter Savage Landor. "Ranch Life in the Far West," is an interesting and readable sketch. The series of war articles, "Pictorial Art on the Stage," "Abraham Lincoln, Premier or President?" are other noteworthy articles of the midwinter number. Published by the Century Co., New York. .... *The Bookmart* for January, published by the Bookmart Company, Pittsburg, Pa., is filled with interesting matter on literary men and letters.... *Wide Awake*, published by D. Lothrop & Co., Boston, is proving that it is one of the best magazines for young folks, by offering prizes aggregating $2,000, for essays, stories, poems, etc., open to anyone connected with American (including Canadian) schools and colleges. Send for a specimen number of the magazine for five cents.

COURSE OF INSTRUCTION FOR N. B. SUPERIOR SCHOOLS.

IN TOWNS, VILLAGES OR DISTRICTS WORKING UNDER REGULATION XXXV., 2, 3, 4.

(To follow Standard IV. of the Ungraded Course or to be adapted where necessary to follow Standard VI. of the Graded Course.)

STANDARD V.

Reading. Reader V.; the pupil to give an intelligent account of the lesson read. Spelling. Dictation exercises. Derivation of words—if the derivatives would add force to their meaning.

Literature. Repeating from memory poetry and rhetorical selections from Reader with clear knowledge of meanings and allusions.

Composition. Written naratives in answer to questions in reading lesson. Paraphrasing passages from Reader. Dalgleish's Introductory Text-Book, Chap. I.

Grammar and Analysis. Text-Book completed.

Latin. Bryce, Book I. to the Verb (optional).

French. French-English Reader No. I., and Elementary Grammar (Duval), (optional)

History. Canadian History, Parts I and II. British History in Reader No. V.

Industrial Drawing. Books I. and II. (revised edition).

Writing. Copy Book. Neatness and legibility required in all written exercises.

Singing. (Optional).

Arithmetic. Elementary Text-Book completed. Commercial Forms.

Geometry. First ten Propositions of Book I. (Hamblin Smith), with the introductory part.

Algebra. Signs, Definitions, Addition, Subtraction.

Geography. Review of Dominion of Canada; general geography of the United States; British Isles in detail. Map drawing from memory.

Useful Knowledge. Minerals (Bailey's Elementary Natural History). Chemistry of Common Things, Part I.

STANDARD VI.

Reading. Reader V., as before, with spelling, dictation and derivation.

Literature. As in Standard V.

Composition. Dalgleish's Introductory Text-Book, Part I. completed, with application of principles to original exercises.

Grammar and Analysis. Exercises from Reader and Text-Book reviewed.

Latin. Bryce's First Book completed. (Fables omitted) (Optional.)

Greek. Bryce's First Book, to the Verb (optional).

French. French-English Reader No. II., and Elementary Grammar or Telemaque Book I. (optional).

History. Outlines of British History in Reader completed, and supplemented by Thomson's History of England. History of Canada completed.

Industrial Drawing. Books III. and IV. (revised edition).

Writing. Copy Book. Neatness and legibility as before.

Singing. (Optional.)

Arithmetic. Compound Interest, Discount, Insurance, Assessment of Taxes, Square Root with applications, Commercial Forms.

Geometry. Book I. completed.

Mensuration. Mensuration of Surfaces.

Algebra. Multiplication and Division, and Chaps. XIX. and XXI.

Geography. The Great Oceans, from Reader. General Geography of Asia, South America and Africa. Map drawing from memory. Problems on terrestrial globe.

Useful Knowledge. Bailey's Elementary Natural History completed. Chemistry of Common Things completed. Health of the Body, from Reader. Physics, as in Hotze's, to be given orally with illustrations.

STANDARD VII.

Reading. Reader VI. Special vocal and elocutionary exercises to secure just expression.

Literature. Reading and critical examination as respects language of one of the prescribed English Classics.

Composition Elegant written paraphrase of passages from the English Classic under study. Dalgleish's Introductory Text-Book completed, with application of principles to original exercises.

Grammar. Occasional exercises from Reader.

Latin. Nepos and Cæsar from Bryce's Book II. Parsing and Syntax. Imitative exercises from Reader. (Optional).

Greek. Bryce's First Greek Reader completed (optional).

French. French-English Reader No. III. Telemaque continued. Grammar. (Optional).

History. Outlines of General History, Swinton.

Industrial Drawing. Books V. and VI. (revised edition.)

Writing. Copy Book, if found necessary; but legibility and neatness required in all written exercises.

Singing. (Optional).

Arithmetic. Cube Root, with applications. Commercial Rules completed.

Geometry. Books II. and III. **Mensuration** of Simple Solids.

Algebra. To end of Simple Equations, with that portion of Text omitted in Standard VI.

Geography. Geography in all Reading lessons and in History. British Colonies. Map drawing as before. Problems on terrestrial globe continued.

Useful Knowledge. Physiology and Hygiene. Physics (oral) as in Hotze's, with illustrations.

STANDARD VIII.—(Supplementary).

Reading. As before.

Literature. As in Standard VII.

Composition. Dalgleish's advanced Text-Book.

Latin. Bryce's Second Book completed. Parsing and Syntax. Imitative exercises. (Optional).

Greek. Bryce's Second Reader. (Optional).

French. Telemaque continued. (Optional).

History. Greek and Roman History, Collier; or Outlines of the World's History, Swinton. Geography of places named.

Industrial Drawing. Drawing Book No. VIII. (revised edition).

Writing. Neatness and legibility in all written exercises.

Singing. (Optional).

Arithmetic. Review and the solution of any Arithmetical process.

Geometry. Book IV. and review.

Algebra. Quadratics and review.

Useful Knowledge. Gray's How Plants Grow, studied at such time as the season is suitable.

Natural Philosophy. Wormel.

N. B.—The above Course was framed by the Chief Superintendent and the Inspectors, and was ordered by the Educational Institute to be published in the **Educational Review**, as well as the Grammar School Course which appeared in the October number. Both courses have recently been authorized by the Board of Education to be used till a High School Course is prescribed. The Grammar School Course is to be taken as the Superior School Course in cities and incorporated towns.

COMMON SCHOOL COURSE.

At the meeting of the Executive Committee of the Educational Institute of New Brunswick, held on the 5th inst., a communication from the Chief Superintendent was read, relative to the resolutions passed by the Institute in June last and transmitted to the Board of Education. It was therein stated that the Board had been pleased to approve the resolutions relating to a Course of Instruction for Grammar Schools and Superior Schools, and to make the following order thereon:

"*Ordered*, That the schools specified in the resolutions be authorized to adopt the respective Courses of Instruction designated therein, until the close of the term ending June 30th, 1888, or till such time as a Course of Instruction shall be prescribed."

A copy of the resolution is hereto annexed, and also a copy of the report of the committee to revise the Course of Instruction for Common Schools. The latter was not adopted by the Institute, but its consideration was deferred till the next meeting; and meanwhile the Executive Committee was authorized to have it printed in the EDUCATIONAL REVIEW for the information of teachers generally.

HERBERT C. CREED.
Sec'y-Treas. to Executive Committee.

Fredericton, January, 1888.

Resolution Passed by the Educational Institute of N. B.

(Referred to in above order).

Resolved, That this Institute recommend the Board of Education to make the following order, viz.:

That for the next two terms,

1st. All High Schools of the Province working only in Standard IX. and upward shall adhere to the Course of Instruction to-day submitted by the Committee for Grammar Schools, called here the *High School Course;*

2nd. That all schools of the Province working only in Standard VIII. (or VII. and VIII.) and upwards, shall also adhere to the before-mentioned High School Course, so called, and the teacher may, if the circumstances of the school require, modify either Standard VII. or VIII., or both, according to his best judgment, subject to the approval of the Inspector;

3rd. That all Superior Schools in villages and country districts, not holding the rank of those referred to in the two preceding sections, shall adhere to a Course of Instruction framed by the Chief Superintendent and Inspectors.

Amendments in the Course of Instruction Recommended to the Educational Institute of N. B., June, 1887.

GRADE I.

NUMBER. To use *strokes* during the first term, but *figures* in the last.

WRITING. To use print-script from the beginning, the slates to be ruled.

SPELLING. Spelling words in Primer to be added to the year's work.

GRADE II.

WRITING. Common writing to be taken up during the latter part of the year.

READING. Royal Reader No. 1, Part II.

GRADE III.

ARITHMETIC. To include numbers up to a million.

READING. Royal Reader No. 2, to "Metals."

GEOGRAPHY. The roads of the county to be omitted from the map.

GRADE IV.

READING. Royal Reader No. 3, to page 145.

GEOGRAPHY. North America only to be treated with respect to its great physical features; productions and industries omitted.

GRADE V.

READING. To page 142.

GEOGRAPHY. Maritime Provinces in detail. Latitude and Longitude.

GRAMMAR. Parts of Speech. Subject and Predicate. Gender, Number and Person.

PHYSICS. The Physics of this Grade to be omitted.

GRADE VI.

ARITHMETIC. Vulgar and Decimal Fractions. No Scales.

GEOGRAPHY. Remaining Provinces of the Dominion. North America. Newfoundland. Outline map.

PHYSICS. Substitute the Physics of Grade VII.

GRADE VII.

CHEMISTRY. To end of "The Plant and what it yields us."

COMPOSITION. Omit Transposition from poetical to prose form. Continue Narrative Composition of V. and VI.

HISTORY. Outlines to end of Stuart Period.

GEOGRAPHY. United States. Change of Seasons.

ARITHMETIC. Add Ratio and Simple Proportion.

PHYSICS The Physics of Grades V. and VI.

GEOMETRY. Definitions, etc., to end of Prop. C.

GRADE VIII.

GEOGRAPHY. Omit list of Colonies.

HISTORY. Outlines of British History completed and reviewed.

COMPOSITION. Introductory Text, to end of Synthesis of Compound Sentences. Narrative as in VI. and VII.

GEOMETRY. To Prop. 32 of Book I. Exercises.

GRAMMAR. Text completed. Analysis of sentences of four clauses.

MENSURATION. Rectangles, Squares and Triangles.

ARITHMETIC. Omit Compound Interest.

TIME TABLE.

THE FOLLOWING TIME TABLE FOR MISCELLANEOUS COUNTRY SCHOOLS, IS PUBLISHED WITH THE HOPE THAT IT MAY BE OF ASSISTANCE TO MANY TEACHERS IN ADAPTING TO THEIR WANTS.

	10	60	35	15	40	20	60	60	25	20	15	40	20
MONDAY..	Roll Call and Opening.	Reading Spelling and Comp.	Arith. Num. and Algebra	RECESS.	Geog.	Gram.	DINNER.	Arith. Num. and Algebra.	Canada History.	Writing.	RECESS.	Reading &c.	Draw'g.
		65	30		20	40		50	40	15		30	30
TUESDAY.......		do.	Arith. and Num.		British History.	Nat. Sc. and Comp.		Arith. and Num.	Reading &c.	Writing.		Chem.	Geom.
		60	35		40	20		55	30	20		40	20
WEDNESDAY...		do.	Arith. Num. and Algebra.		Geog.	Gram.		Arith. Num. and Algebra.	Canada History.	Writing.		Reading &c.	Draw'g.
		65	30		20	40		50	40	15		30	30
THURSDAY. ...		do.	Arith. and Num.		British History.	Nat. Sc. and Comp.		Arith. and Num.	Reading &c.	Writing.		Chem.	Geom.
		60	35		20	40		55	20	30		40	20
FRIDAY...... ..		do.	Arith. Num. and Algebra.		Geog.	Gram.		Arith. Num. and Algebra	Canada History. (Review)	Dict'n.		Recit'n. and Singing.	Spelling Match.

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PICTOU, - - - - Nova Scotia.

The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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G. U. HAY, Ph. B., Editor for New Brunswick.

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[Circular].

INTERPROVINCIAL ASSOCIATION.

The teachers of New Brunswick, Nova Scotia and Prince Edward Island will meet in an Interprovincial Convention in the City of St. John, N. B., during the third week in July next.

The object of the gathering is to bring the educational workers in the three provinces together for mutual helpfulness, for the cultivation of professional spirit and for the stimulation of public interest in educational work generally.

On Tuesday evening, July 17th, the civic authorities of the twin cities of St. John and Portland will extend a public welcome to the visiting teachers in the Mechanics' Institute, where all the meetings, except those of Thursday morning, will be held.

At the close of the meeting the Convention will formally organize by the election of a president and other officers.

On Wednesday morning, at 9.30 a.m., the teachers will assemble for enrolment, and from 10 to 12.30 two or three distinguished educationists will address the Convention on some of the more general aspects of popular education. On Wednesday afternoon the topic for consideration will be "The Relation of the Common School to Social and Industrial Life," and on Wednesday evening "The Influence of the College upon Industrial and Social Progress" will be taken up. The discussion will be conducted by leading representatives of Maritime Province Colleges.

On Thursday forenoon the Convention will divide itself into sections as follows: (*a*) Normal School; (*b*) Inspectoral; (*c*) High School; (*d*) Common School; (*e*) Primary School. The school buildings of the city will be placed at the disposal of the Convention for the sectional meetings. In the sections the discussions will be conducted by those connected with each, and will be specially interesting.

On Thursday afternoon a digest of the proceedings in each section will be presented for discussion in open Convention.

On Thursday evening the Convention will close with a general meeting to be addressed by distinguished public men.

On Friday it is proposed to provide an excursion up the river St. John, then at its best, to Fredericton, and returning the same day to St. John in time to connect with night trains for the east and west. At Fredericton the party will be received in the City Hall by the Mayor and Council, will afterwards visit the Legislative and other public buildings, and, if possible, a side trip to Marysville will be arranged.

It is believed that this gathering will be the most influential as well as the most interesting ever held in the Maritime Provinces, and that its attractions and advantages will be such as to secure a large attendance of the teachers of the Provinces generally.

Special arrangements for the accommodation of visitors will be made, of which information will be given later in the columns of the REVIEW.

The usual reduced rates on all railway and steamer lines will be made for members of the Convention.

A detailed programme of the Conference will be published later.

SUPT. MONTGOMERY,
F. H. EATON,
ELDON MULLIN,
Genl. Committee.

EDITORIAL NOTES.

THE Interprovincial Association of teachers, to be held in St. John in July next, will be the most important educational gathering ever held in these provinces. The provisional programme published on our first page will be read with interest. Eminent Canadian teachers will be present and address the Convention. The people of St. John will extend a cordial welcome to the visitors, and everything points to the success of a meeting which has for its object a closer union among the teachers of the three provinces.

INFORMATION about the Summer School of Science of Nova Scotia, can be obtained from the Secretary, Prof. J. B. Hall, Ph.D., Normal School, Truro, N.S.

J. SCOTT HUTTON, M.A., Principal of the Institution for the Deaf and Dumb, Halifax, N. S., sends a circular to the teachers of Nova Scotia, pointing out that the law of the province provides *free* education and board for the deaf mutes at the institution, and asks them to co-operate with him in bringing this fact to the knowledge of any who may be benefited thereby.

AT a convention of teachers held at Regina, N. W. Territory, recently, the series of copy-books published by J. & A. McMillan, of St. John, received very cordial approval. The series will probably be adopted for use in the schools of that territory.

WE hope that Arbor Day will be even more generally observed this year than last. To make it successful preparations cannot be made too early. A portion of the April and May numbers of the REVIEW will be devoted to plans and suggestions for the successful observance of the day.

REV. D. HONEYMAN, D.C.L., F.R.S.C., F.S.Sc. (Lond.), the well-known Nova Scotian geologist, author of "Giants and Pigmies," has colored a geological map of Nova Scotia, New Brunswick and Prince Edward Island for the Pictou Academy. He is also preparing a similar map for the Halifax Academy, we understand. His latest work, "Giants and Pigmies," which is an outline of the geology of these provinces compared with the geology of the world, is sold at fifty cents. It has received distinguished commendations both at home and from abroad.

WE have to thank D. Wilson, Esq., A. B., Inspector of Schools, New Westminster, for a copy of the Annual Report of Public Schools of British Columbia for 1887. We recognize many familiar names on its pages of teachers from the Atlantic Provinces.

SAID a teacher the other day: "I like the REVIEW well, but could you not bestow more attention on the primary work of schools." We are anxious to do so; and invite teachers to contribute to the pages of the REVIEW, methods and plans which they have found to work satisfactorily in their schools. Successful and experienced teachers can be of great assistance to the more inexperienced in this way. At the same time it may not be amiss to caution young teachers against accepting the methods of others, except as hints from which they may elaborate materials for lessons to suit their particular needs. It is not so much the method that tells as the spirit, intelligence and enthusiasm with which it is carried out; and little or no enthusiasm can be aroused in a class by presenting a "ready-made" lesson, or one which the teacher has not made his own by careful preparation. There is a joy, too, in exercising one's ingenuity in adapting working methods to suit particular needs, and an enthusiasm is aroused and a confidence begotten that no tame acceptance of plans of school work can afford. And then it fosters what we should all strive to cultivate—more individuality in teaching.

IN a paper read before the N. B. Natural History Society recently, Mr. J. Vroom of St. Stephen contributed some interesting statements concerning the amelioration of our climate, gathered from his observations of the flora of the Province. He pointed out that plants of a southern character are gradually working their way northward, while those of a boreal type are gradually retreating. An interesting case of this migration is the *Lobelia cardinalis* which, gradually working its way through Charlotte County from the westward, has reached the valley of the St. John by way of Eel River.

THE Dalhousie College *Gazette* does not look with favor on the contemplated opening of the college early in September. It will not enable the students to attend college during the winter and teach during the summer term. All our colleges in Nova Scotia meet with the same difficulty. An annual shcool term commencing in August or September is apparently the arrangement which commends itself to the views of our collegiate and university educators. A student could then teach a full year, alternating with a year in college, instead of a half year as now, with a total loss of a great portion of the summer term.

AT the next meeting of the Albert County, N. B., Teachers' Institute, to be held in October, prizes will be awarded to pupils of the schools showing best work in the subjects of Standards III.-VII. inclusive.

EDUCATIONAL PROGRESS.

The reports of the Chief Superintendents of Education for Nova Scotia and New Brunswick have come to hand, and we present to the readers of this issue of the REVIEW some particulars of our educational standing and progress. For the sake of comparison there are subjoined some data of education in the Province of Ontario and the State of New York.

While the mere statistical portions of these reports reveal but little of the *inner* work of the schools, and the education—moral, mental and physical—of the thousands of pupils who are here represented by numbers, yet there is sufficient to indicate in the reports of the two provinces a substantial progress. And one has the more confidence in these educational reports if, in addition to "general averages," "percentage of attendance," crowded "courses of instruction," with the number of pupils studying the various "branches," there is presented by school officers a candid statement of barriers to our educational progress; a judicious sifting of progressive work and intelligent methods from figures and averages; if in the careful review of work performed a generous praise of what is good and effective is coupled with a *judicious* finding fault with what is weak and ineffective.

The report of Chief Superintendent Crocket on the schools of New Brunswick is an interesting document covering nearly 250 pages, and has the fullest details of all branches of the service. In its opening pages he alludes to the improvement in methods of instruction, the increase of trained teachers, and the demand for their services in consequence of the satisfactory character of their work, and the encouraging progress in the erection of new and more commodious schoolhouses, with the taste displayed in beautifying and improving the grounds.

The statistics for the year ending June 30th, 1887, show that there were 68,583 pupils enrolled on the school registers. This was a slight increase on the previous year. The proportion of population attending school in the second term of 1886 was 1 in 5.96, and in the first term of 1887, 1 in 5.37. The percentage of enrolled pupils daily in attendance has not materially increased, being for the time the schools were in session 60.68 per cent. for the second term of 1886, and 56.80 per cent. for the first term of 1887. The highest percentage made in any year was in the April term of 1883, when it rose to 62.79, which must be regarded as phenomenal as it fell in the corresponding term of the following year to 59.68. But "even the highest percentage goes to show that there is much irregularity in the attendance, and that it is necessary some effort be put forth by all the school officers, as well as others interested, to bring about a more satisfactory showing in this respect. No attendance less than 75 per cent. should be deemed satisfactory." Among the cities and incorporated towns, Fredericton and St. Stephen (the one with a yearly average of over 78 per cent. and the other over 77) make the best, and Woodstock the poorest showing in the matter of the percentage of enrolled pupils present.

There were 1,568 teachers employed for the second term of 1886, and 1,593 for the first term of 1887.

One gratifying feature of the report is that during the year there was less movement from district to district on the part of teachers, and that the percentage of new teachers in charge of schools was smaller than in the previous year. But there is a reverse side, and that is the decrease in salaries of teachers, as may be seen from the following average salaries for the year from all sources:

Male	Teachers,	1st Class	...$521 30	decrease	...$2 42
"	"	2nd "	.... 307 92	"	.... 5 82
"	"	3rd "	.... 231 00	"	.... 0 08
Female	"	1st "	.... 324 40	"	....10 18
"	"	2nd "	.... 226 87	"	.... 0 19
"	"	3rd "	.... 187 57	increase	.... 0 70

This, showing especially such a marked decrease in the salaries of the female teachers of the First Class, is a retrograde step. The report attributes the falling off to a decrease in the amounts voted by districts. It may be found when too late that economy in this matter is something more than foolish, especially when it is applied to a class of teachers who are justly regarded as ornaments to the profession, and whose efforts to advance their educational status merit a better recognition.

The sources of support to schools for the year are as follows: Provincial, $137,186.92; County Fund, $94,558.00; District Assessment, $182,222.11; Total, $413,967.04. The average cost of each pupil for the year from all sources, including the pupils of superior and grammar schools, was the moderate sum of $6 04.

There were forty-five superior schools in operation during the first term of 1887, out of a possible forty-nine allowed by law for the province on the basis of population. These schools, as would appear from the report, as well as from the records of the Inspectors, are doing excellent work. Those established in incorporated towns or in districts which have a regularly graded system are carrying out a course of instruction authorized for grammar schools.

The grammar schools of the province had enrolled for the second term of 1886, 2,725, and for the first term of 1887, 2,788. Outside of the Collegiate School of Fredericton and the St. John Grammar

School there were only about 130 pupils in advance of Standard VIII. in attendance. Adding this number to the pupils attending the St. John and Fredericton grammar schools for the first term of 1887 (241) we have 371 pupils in these schools studying branches in advance of the common school course. In addition to these, 172 pupils are reported from the superior schools in advance of Standard VIII., making less than 600 pupils pursuing an advanced course, or less than one per cent. of the pupils enrolled. In this connection we may remark that in St. John scarcely two per cent. of the pupils yearly enrolled in the city schools reach the high school. It would thus seem that either the provisions for carrying out a system of secondary education are inadequate, or that the people do not value their privileges in this respect.

Supt. Crocket draws attention to the inadequate provision for higher education, and outlines a plan for the establishment of five high schools for the province instead of the grammar schools. Taking the rapid growth and efficiency of the superior schools as a testimony that the people of the province are ready to appreciate the advantages of secondary education, provision should be made for the establishment of one high school for a population of from nine to twelve times the number required for a superior school (6,000). Five high school sections are named for the province—a northern, embracing the counties of Restigouche, Gloucester, Northumberland and Kent; an eastern for Westmorland, Albert and Kings, or a part of Kings; a southern for St. John city and county, and perhaps part of Kings; a central for York, Sunbury and Queens; a western for Charlotte, Carleton, Victoria and Madawaska. Adequate provision is to be made for the support of these schools, both from the provincial chest and from local sources. The head master of each school is to draw $1,000 from the province, and the second $250. If the enrolment exceeds ninety an additional teacher must be employed, and if it exceeds 160 a fourth teacher is required.

The scheme is a comprehensive one. That some provision for extending and stimulating our secondary education should be made is apparent to all when the meagre results of the past years is taken into consideration.

There are other points in the report to which reference will be made in future issues.

The report of Chief Superintendent Allison on the schools of Nova Scotia for the year ending October 31st, 1887, has been received. The number of scholars enrolled in the schools of the province was 84,217 for the winter term, and for the summer term 86,713, or a total number of different pupils during the year of 105,137. The proportion of population attending school was 1 in 5.2 for the terms given above, or 1 in 4 1 for the year. The percentage of pupils daily present on an average was, for the winter term, 56.7; and for the summer term, 56.8. There were 2,081 teachers employed for the winter term, and 2,158 during the summer. The sources of support for the year are as follows:

Provincial	$203,564 19
County Fund	119,047 38
District Assessment	290,544 05
Total	$613,155 62

The above does not include amounts for buildings and repairs nor the grants to the Normal School, etc., which, if added to the above, would make a total expenditure for schools of $672,348.21.

In respect to schools and teachers "the numbers of the present year are the largest yet recorded in the history of our school system."

The following is the average salary of teachers, with increase or decrease compared with the previous year:

Male Teachers.	1st Class..	$438 01	decrease..	$0 66
" "	2nd " ..	273 57	" ..	14 18
" "	3rd " ..	182 87	" ..	15 66
Female "	1st " ..	304 69	increase ..	1 13
" "	2nd " ..	230 56	decrease..	6 66
" "	3rd " ..	162 32	" ..	7 52

While the salary of first-class female teachers was lowered in New Brunswick the past year, it is worthy of note that in Nova Scotia this was the only class to realize an increase of salary. In reference to the low average salary of teachers in Nova Scotia, Dr. Allison says:

> "The low scale of salaries which unfortunately is absolute as well as relative, is not, in my opinion, a necessary proof of a mercenary disposition on the part of the people of Nova Scotia, or of a failure to set a true value on educational labor. A simple recollection of the fact that the general supply of teachers is largely in excess of the demand would save much declamatory fault-finding. The phenomenon of low salaries is simply the result of an exorable economic law. Anything that will operate towards a closer equalization of the supply of teachers and the real demands of the schools for teachers, will so far tend to place the profession of teachers on a better footing financially."

A statement on another page of the report is worthy of remark:

> "The chief disturbing element in our educational system is an annual access to the so-called profession of teaching of several hundreds of young persons mostly between sixteen and nineteen years of age. * * * Who can rationally expect an untrained boy or girl of sixteen or seventeen to strike

by intuition on correct methods of instruction or discipline, or to educe them experimentally within such a period as to prevent incalculable mischief during the process? The natural recourse of the perplexed novice is to the practice of pure memoriter text-book recitations, with their consequent intellectual stagnation and sterility, and with the chances strongly in favor of this vicious method perpetuating itself."

The remedy for this is to make "our provincial licenses, with a due regard to vested interests, as reliable guarantees of teaching ability as they now are of scholarly attainments."

To attain this end, Dr. Allison urges that professional preparation be made an imperative standard, but would not insist on compulsory attendance at the Normal School; and he makes the following propositions:

1. The elimination from the provincial syllabus of all professional features, giving to the resulting certificate, according to grade, the character simply of a testimonial of *scholarship*, which shall be held to be the only required non-professional basis of license and the sole credential of admission to the Normal School, where, except as needed for illustrative purposes, the work of general instruction shall no longer be carried on.

2. That the necessary *professional* complement of this general certificate shall be either:

(1). Classification at our own or some other approved Normal School doing equivalent work; or,

(2). The successful passing of a professional examination under definite provincial regulations, which shall in general embrace the requirements implied in (1) and which shall be conducted in some central place providing the necessary conditions, partly of course in writing, but largely by exhibitions of practical work, with oral questioning on points arising in connection therewith.

3. That the general provincial examination should be made self-sustaining, while the expenses of the special one for licenses should be borne by the province, and should include reasonable travelling allowances for the candidates.

4. That as third-class teachers are a "vanishing quantity" in our system, they might be excepted from these arrangements, some local method of granting them professional certificates being provided.

Among the advantages I would anticipate from these modifications, I may mention, in addition, of course, to the increased efficiency of the teaching staff of the province, with the corresponding gain to the schools:

1. A most desirable differentiation of academic and professional instruction. The Normal School, relieved of the burden of ordinary class-room work, would concentrate its energies on professional studies and practice, with attention to certain intermediate subjects, such as music, drawing, science in its relations to oral elementary teaching, etc. The high schools, academies, and superior schools generally, would experience a similar relief and in like manner be set free to carry on their proper functions as instruments of secondary education. At present while almost every school in the land has its class of candidates "studying for license," no teacher is under the slightest obligation to [illegible] in the required professional subjects. [illegible] should not have, any place in the established course of study. So far as instruction is given in them, they are taught in an irregular sort of way, generally "out of hours." Under the proposed arrangement, this vexatious addition to regular work would come to an end. The [illegible] syllabus for teachers would be identical with the advanced portions of the prescribed course of study.

2. Such an equalization of supply and demand in the matter of available teachers as would make the profession of teaching at once more remunerative and more honorable. Some persons having purely temporary purposes to serve by becoming teachers might experience inconvenience; those who propose permanent identification with the profession would gain much in every way. But enlargement on this point is not necessary. In any case the interests of society must override those of individuals.

The report of the Minister of Education for Ontario shows that the number of children attending school at present is less than it was ten years ago. The maximum was in 1877, the minimum in 1883. They were respectively 490,860 and 464,369. In 1886 the number was 487,496. The minister observes a slight improvement in the regularity of attendance; but refers to the "compulsory attendance" clause of the law, which requires 100 days' attendance per annum for all between seven and thirteen years of age, as never having been enforced by the trustees. In 1886 there were 7,364 teachers, of whom 2,727 were males and 4,637 females. There has been a steady decrease in the number of male teachers. The average salary of male teachers was $424, of female teachers $290. In counties they were $400 and $270 respectively; in cities $794 and $401 respectively. There are 5,454 school-houses, of which 607 are log buildings. The average cost per pupil was $7.09 on total attendance and $14.46 on average attendance, against $6.13 and $14.15 in 1876. There are 109 high schools with 378 teachers and 15,344 pupils, costing $31.14 per pupil on total attendance. There are fifty-five model schools for the training of teachers—1,491 were in attendance for 1887, of which 1,375 succeeded in passing.

From the last annual report of the public schools of the State of New York, we find that the number of children of school age was 1,763,115; the total enrolment, 1,037,812, and the average daily attendance, 625,610. That is, the average attendance is about 60 per cent. of the enrolled pupils and only about 35 per cent. of the total children of school age. Of 31,000 teachers only 5,821 are males. From these figures we find the average school for each teacher to have an attendance of about 20 pupils only, in a section containing 57 children of school age. The average of teachers' salaries in the cities is about $687 per annum, and in towns about $262. The State of New York is evidently not ahead of the Atlantic Provinces of Canada in the matter of popular education. Its superintendent of education also points out that the uneducated class is increasing, and that the attendance in the schools does not keep pace with the growth of the population.

A QUARTER OF A CENTURY AGO.

We have come upon the Proceedings and Constitution of the Educational Association of Nova Scotia, held in Dalhousie College, Halifax, on the 25th, 26th, and 27th of October, 1862, just over a quarter of a century ago. President, Rev. Alexander Forrester, D.D., Superintendent of Education; Vice-Presidents, Rev. Edwin Gilpin, M.A., and Mr. George Hutton; Secretary, F. W. George, M.A.; Committee of Management, Messrs. Calkin, Patterson, Hutton, McCullagh and Hemmeon; Special Committee to report on Educational Journal, Messrs. Garvie, Hutton, Rand, Willis and Thompson. The following is the report of this Committee:

> EDUCATIONAL JOURNAL. There seems to be a general and strong opinion among teachers regarding the necessity of having a journal of education to advocate the claims of education and educators. After discussion it was unanimously resolved to appoint a committee consisting of Messrs. Garvie, Hutton, Rand, Willis and Thompson, to take whatever steps may be requisite to issue a periodical. In the course of discussion it was stated that 1,000 copies of a monthly journal would cost £125; and it was suggested that application might be made to the Legislature for aid to the work.

In 1887, this journal at length came into existence in the shape of the REVIEW. No legislature, however assisted in its incubation, nor does the chicken depend on the fitful protection of such a foster-mother. And already, before three-quarters of the first year of its existence has passed we can congratulate our patrons on its strength as well as its independence—a strength which might well surprise that veteran Committee of 1862. We trust that our patrons may find it steadily improving. In the matter of illustrations, we can afford to go to greater expense than in the past; and experience will enable us to discover the kind of assistance our teachers most need.

AT a meeting of the "Frœbel Institute," Halifax, last week, a resolution was passed advocating the adoption of the Kindergarten system, as far as practicable, as a part of the public school system of the province, and a public meeting is to be called at an early day to discuss the subject.

AN IMPORTANT INDUSTRY.

The Association of Nova Scotia Fruit Growers met at Wolfville, Feb. 16th. The REVIEW has been and will continue still further to advance the interests which this Association endeavors to stimulate, by calling attention to the insect enemies of our fruit raisers and the best method of treating them. And as the REVIEW is already very generally in the hands of our teachers, and especially so in the fruit raising districts, we trust that in a short time this industry may demonstrate that our common school education is not adverse, but favorable to the development of industrial occupations. Among those who took part in the work of the Association we observe the names of many of our leading educational men. This shows plainly the drift of modern thought in the educational field. Principal A. McN. Patterson read a paper on a subject which a very successful experience well qualified him for, "The Growing of Orchards." Professor Eaton, of the Normal School, read a very able paper on the "Conditions of Success in Agriculture." W. D. Dimock, a former Principal of the Truro High School, and later Commissioner for Canada at the Colinderies in London, gave an interesting account of the "Farmer at the Colonial and Indian Exhibition." Professor Lawson, of Dalhousie University, President of the Royal Society of Canada, addressed the Association on "Recent Discoveries in Plant Growth and their bearing on Fruit Culture." Professor Kierstead, of Acadia College, was the orator of the occasion, while Professor Smith, of the School of Agriculture, gave "Hints to the Fruit Growers," and was always ready to give the benefit of his extensive knowledge in the discussions. Dr. Reid, Superintendent of the Nova Scotia Insane Asylum, also read a paper on "Agriculture, a Profession." This is a good showing for our public educational men. Fully one hundred and fifty persons were in attendance. Dr. Henry Chipman, of Grand Pre, was elected President; W. H. Blanchard, Esq., of Windsor, first Vice-President; and C. R. H. Starr, Esq., was re-elected Secretary-Treasurer.

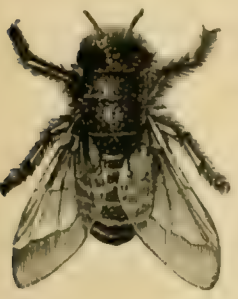
Mr. Patterson said: "One acre of good orchard is worth more than four of poor. Hundreds of trees throughout our valley have returned their owners $20 each. An acre of good land will support 40 trees, which gives $800 per acre. This is not a wild calculation, but fairly possible to intelligent, thorough and industrious work. Individuals this year have received over $200 from a quarter of an acre. One grower received $304 for 50 barrels, clear of all expenses."

The apple crop of 1887 was only about one-third of that of 1886. About 50,000 barrels were exported to Great Britain at prices between $4 and $5 for the best.

FERNDALE SCHOOL.

No. X.—The Sheep Bot-Fly. (*Œstrus Ovis*, Linn.)

Teacher. Here we have the Sheep Bot-Fly drawn magnified about three times its length and breadth. Let us examine our specimen under a lens and it will appear just as large. What is its general appearance?



Scholar. Hairy, and of a dirty ash color.

T. Its thorax—

S. Has four small black lines and black dots.

T. The abdomen—

S. Is specked with yellowish marks.

T. Is it of the same shape in each specimen?

S. No; it is tapering in some specimens—the female, I suppose.

T. Correct. Have you seen them molest the sheep?

S. Yes. They fly about their noses, and the sheep shake their heads, hold their noses down to the ground, and try to run away from them, and sometimes stamp their forefeet.

Another S. I have seen the sheep stand in a little circle with their noses all together in the centre, so that the fly couldn't get near them. And sometimes tar is put on their noses to help in keeping the fly away.

T. Very well observed. I shall now give you the history of the fly. Its only work is to place its eggs, of which it may produce over 300, or the young larvæ (as the eggs have been found to be hatched in its body) on the nostril of the sheep. The larvæ move up the nostril, holding on to its tender lining with the minute hook with which their head is furnished. They remain in the upper cavities of the nose until next summer, causing by their irritation an abundant flow of mucous and purulent matter, on which they feed. The sheep becomes weaker, loses its appetite, and often dies. When these grubs are very numerous, the struggle for food will cause some of them to enter the brain through natural openings in the bony partition between it and the nasal chamber.

S. I have seen people blow lime or a little hellebore into the sheep's nostrils to cause them to sneeze; and sometimes the grubs would be blown out.

Another S. I have seen them inject salt water and a weak solution of carbolic acid in water for the same purpose. But do they ever come out of their own accord?

T. Yes. When they reach maturity, say in June, they may descend the nostrils, fall to the ground, and in twenty-four hours change into the pupa state, with a small hard black case. In six or seven weeks it pushes off the little cap on the end of its pupa case or cocoon, and comes out as the perfect fly.

AMONG THE CONSTELLATIONS.

No. VI.—Canis Major, Etc.

> A sky full of silent suns.
>
> *Richter.*

In the southern sky, lower than Orion and farther to the east, is the constellation of the Greater Dog. In its head shines the brightest fixed star in the heavens, Sirius, sometimes called the Dog Star. Hence the name of our Dog Days. This name had its origin in Egypt. Camille Flammarion thus accounts for it: "The overflowing of the Nile was always preceded by an etesian wind, which, blowing from north to south about the time of the passage of the sun beneath the stars of the Crab, drove the mists to the south, and accumulated them over the mountainous country whence the Nile takes its source, causing abundant rains, and hence the flood. The greatest importance attached to the foretelling the time of this event in Egypt where no signs of the distant cause of this flooding was ever visible, so that the people might be ready with their provisions and their places of security. The moon was of no use for this purpose, but the stars were, for the inundation commenced when the sun was in the stars of the Lion. At this time the stars of the Crab just appeared in the morning, but with them at some distance from the ecliptic, the bright star Sirius also rose. The morning rising of this star was a sure precursor of the inundation. It seemed to them to be the warning star, by whose first appearance they were to be ready to move to safer spots, and thus acted for each family the part of a faithful dog, whence they gave it the name of the Dog, or Monitor, in Egyptian *Anubis*, in Phœnician *Hannobeach*, and it is still the Dog Star—*Caniculus*—and its rising commences our *dog days*. The intimate connection between the rising of this star and the rising of the Nile led people also to call it the Nile Star, or simply the Nile; in Egyptian and Hebrew, *Sihon;* in Greek, *Sothis:* in Latin, *Sirius*."

Our *dog days*, however, do not coincide exactly with the time when Sirius commences to be visible in the morning in this latitude. Near the equator Sirius rises with the sun about the first of July; further north, later. In the latitude of the Atlantic Provinces of Canada, in August.

Two or three degrees west of Sirius (Alpha) is Beta of the third dimension in the dog's upraised forefoot. Six or seven degrees downward are Delta and Epsilon of the second magnitude, about two degrees apart. These form a right angle with Eta of the third dimension below.

Above this constellation, in the milky way, is a considerable space with no conspicuous stars, which forms the constellation *Monoceros*, the unicorn. A little higher up on the other side of the milky way is the small constellation *Canis Minor*, with two stars about three degrees apart, the larger, Procyon, being of the first magnitude. A little further up still is another pair of stars, Castor and Pollux in *Gemini*—Castor being the one further north, and a double star under the telescope.

The parallax of Sirius is given by Herschel at .15″ (15 hundredths of a second), which would make its distance 1,375,000 times greater than the distance of our sun from the earth. Flammarion calculates it to be 2,600 times greater than our sun. It is slowly changing its position, and shows perturbations which can be accounted for only on the hypothesis of its having one or more large planets revolving around it. Alvan Clark of Boston, in 1862, was the first to see one of these planetary bodies. The observation was made with one of his own manufactured telescopes, and has since been more accurately repeated in European observatories. This, with numerous other examples, compel us to look upon the stars as distant suns, which may have planetary systems of greater magnitude than that of our own sun.

The Planets in March.

Mercury will be in greatest western elongation March 30th, when it may be visible as a morning star just before sunrise, in the east.

Venus is still brilliant as a morning star. At the end of the month it rises about three-quarters of an hour before sunrise. Conjunction with Mercury on 27th.

Mars is morning star. It is in Virgo, and at the end of the month will be near Spica, a star of the first magnitude, nearly on the ecliptic. It will then rise before 8 P. M., and in the morning will be in the western sky.

Jupiter is morning star, rising about 11 P. M. He is in Scorpio, and will be seen southwest of the zenith in the morning.

Saturn is evening star, and is in Cancer. It is south of the zenith in the evening and sets before 3 A. M. near the end of the month.

Neptune is in Taurus, more than thirty degrees west of Saturn.

In the middle of March the sun is nine minutes slow of a true clock. In the middle of April the sun and clock agree. They agree only on four days in the year, namely, April 14th, June 13th, August 31st, and December 24th.

FERNDALE NOTES.

II.—Our Iron.

(*a*) MANUFACTURED.

Nearly Pure. Wrought iron, horse-shoe nails, etc., about 7.8 times heavier than water. Is soft and malleable. Will not harden when suddenly cooled by plunging into cold water.

With about one per cent. Carbon—Steel. Varies from soft to hard as percentage of carbon varies from .3 to 1.8. Will harden when suddenly cooled in cold water; this is called tempering.

From two to five per cent. Carbon—Cast Iron. Very brittle, but melts at a lower temperature than the above.

Principal injurious Impurities in Steel. Even one tenth per cent. of *sulphur* makes it brittle when red hot (hot-short); and one-tenth per cent. of *phosphorus* makes it brittle when cold (cold-short). Difficult and expensive to keep these impurities out when they are abundant in the ores. About 10,000 tons of iron per year have been made at the Londonderry Iron Works of Nova Scotia. Blast furnaces have also been in operation near Jacksontown, N. B., and Bloomfield and Pictou, Nova Scotia.

(*b*) ORES.

1. *Native Iron.* Small amount. Nearly all supposed to have fallen to the earth as meteors. Meteoric iron contains generally about 90 per cent. pure iron, with nickel and smaller quantities of other elements.

2. *Magnetic Iron Ores.* Generally composed of the mineral *magnetite.* (Fe_3O_4). Is attracted by the magnet. Its powder is black and therefore makes a black streak on a hard, rough, white surface like unglazed porcelain or quartz. May contain nearly 70 per cent. of pure iron. Found in veins and crystals in southern counties of New Brunswick, in the Triassic Trap of Nova Scotia on the Bay of Fundy, Annapolis, Digby, Pictou and Cape Breton.

3. *Red Hematite Ores.* Principally the mineral *hematite* (Fe_2O_3). Not attracted by magnet. Powder or streak bright red, brown-red, or blackish-red. May contain over 60 per cent. metallic iron. Several varieties—*specular,* when made up of small glittering scales, which may be brushed off with the finger; *micaceous,* when scales are very large; *fibrous,* when showing a fibrous structure; *red ochre,* when earthy;

argillaceous hematite, or *red clay iron stone*, when a heavy, hard, reddish-brown stone containing clay or sand; very abundant in St. John and Carleton counties, N.B., and in Pictou, Colchester, Annapolis, Digby and Cape Breton.

4. *Brown Hematite Ores.* Principally the mineral *limonite* ($2\ Fe_2O_3 + 3\ H_2O$). Powder or streak yellow or yellowish-brown. Not magnetic. *Red* hematite, with water in its composition, may contain over 50 per cent. metallic iron. Varieties—*compact*, often with shining, nodular surfaces, fibrous, etc.; *yellow ochre*, earthy; *bog iron ore*, in marshy places, generally porous and full of various impurities; *brown clay iron stone*, same as the *red* only it gives a yellowish streak. Found in the same localities as red hematite, and other places in inexhaustible abundance.

5. *Spathic Iron Ore.* Principally the mineral *siderite* ($FeCO_3$), carbonate of iron. Whitish grey or brown, generally. Powder or streak, white. When heated crackles and gives off CO_2 and darkens into an oxide of iron which is magnetic. May contain 40 per cent. of metallic iron. Varieties—*crystallized*, *concretionary*, *granular*, *oolitic*, and *earthy* or *stony*, sometimes called *spathic clay iron stone*. Very abundant in Pictou and Colchester counties; found in Cape Breton Island, and Hants Co., etc. *Ankerite* which is a mixture principally of the carbonates of *iron*, *lime* and *magnesia*, comes under this head, and is a very valuable ore, and exists in extensive deposits in Pictou and Colchester. *Sideroplesite*, which is ankerite without the lime, is found in large quantities near the Londonderry Iron Works in Colchester Co.

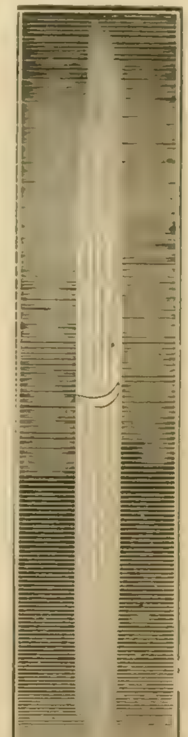
The red sandstone of Prince Edward Island and of Nova Scotia are colored by red hematite, which under certain conditions may be dissolved (especially out of the red soils where organic matter is present), and may be forming at present deposits of bog ore in favorable spots. The yellow and brown coloring matter in our soil is brown hematite, and is subject to same chemical action as the red hematite.

(Other iron minerals in another lesson).

KEEP one or two of your school books to gladden your heart in your old age. When the shadows grow long in the afternoon of life they will be a delight to you. Their oft-conned pages, as you turn them over, will each have a story of its own. Says a writer who accidentally picked up a copy of the English grammar which he studied as a boy: "When I saw that book I felt the marbles bulging in my pocket; the sole of my shoe flapping as I walked; my hands were battered and dirty, and there was a gnawing in my gastric regions as if I had eaten my dinner at recess."

A RARE LUNAR PHENOMENON.

At Pictou, the evening of February 17th was overcast and mild with some snowflakes from the south. After 10 P. M. the sky was clear and the wind apparently shifted to the north. The moon near its first quarter came out bright in the deep blue western sky, which showed a few patches of hazy cloud above the horizon in some places for a portion of the time. A band of light as bright as an aurora and of the exact breadth of the moon was projected vertically from it for a distance of perhaps ten degrees upwards towards the zenith, and as far downwards towards the horizon. The band was exactly vertical with the moon in its centre, as shown in our cut. It remained visible for at least an hour, until the moon set. Rapid fluctuations of intensity in the brightness of this beam were observable, and were tested by two observers calling the maxima and minima simultaneously. It is supposed to have been caused by the interposition of a great mass of transparent air, moving from north to south or *vice versa*, between the moon and the localities of observation. The moisture in the moving mass was being gently condensed into millions of minute linear hexagonal ice crystals, which were all polarized horizontally by the air current. The crystals were so far apart as to leave the air transparent, except in a vertical plane through the moon, where the light was being reflected from the myriads of horizontal facets of the crystals, and also to a certain degree refracted by passing through them. Were the ice crystals lying in every possible direction, the brightness would radiate in every direction from the moon. The varying undulations of intensity were, no doubt, due to the varying character of the crystal-loaded air moving past. A similar phenomenon does not appear to have ever been observed here before.



A SPEAKER at one of the educational gatherings in England thus declaims against history. He says:

> "I give it as my opinion that the teaching of history to boys and girls at school is most pernicious. Why should their young minds be imbued and corrupted by the accounts of battles, massacres, and treacherous assassinations, perpetrated by kings, nobles, clergy, highland chiefs, and border ruffians?"

For the REVIEW].

A USEFUL BOOK.

"Conscious Motherhood" is the suggestive title of a recently published book which is worthy the attentive consideration of parents and teachers. The name of the author, Miss Emma Marwedel, is a guarantee that this is an interesting and valuable educational work. Its title strikes the key note: scientific principles and an intelligent application of them in the early training of the infant, *versus* instinct blindly following tradition. Educated with German thoroughness, she is a kindergartener whose deep insight into Frœbel's system has enabled her to carry out to their logical conclusions some ideas which he had not fully elaborated. In 1876, when she went from Washington to the Centennial to exhibit her kindergarten training classes, she gave utterance to her conviction "that the ball, as representing the sphere, the type of all life, was not made sufficiently prominent in Frœbel's development of the child." In 1882 her "thoughts were so far crystallized" that she presented her "Circular Drawing System, or Childhood's Poetry and Study in the Life and Forms of Nature," together with a Botany and seventeen Classification Charts for the consideration of the North American Frœbel Institute in session at Detroit. This distinguished body gave their unqualified approval and urged its publication, in a series of resolutions, appointing a committee to confer with publishers, etc. "But with all this encouragement, I was still unsatisfied. I felt that I had not yet touched the right spot in human existence, whereon to base the fair structure of human education. . . . Thought upon thought drove me back over the steps the human being traces in his ascent to manhood. I reached the home, the mother, the cradle. Then, at last, in the mother, to whom Frœbel dedicated the first use of the curve, I found the place where the corner-stone of any genuine education must be laid. But where to find that stone which should become 'the head of the corner?' . . . A remarkable book—the first of its kind in range and profundity—fell into my hands at this period. It was the work entitled the 'Soul of the Child,' by Prof. Wilhelm Preyer, of Jena, received by me as a providential answer to my question. And this, which answers not my question only, but every query as to the when, and the how, and the wherefore, which mothers and *all other educators* ask concerning the earliest physical, mental and moral needs of the child, seemed to me a boon which should not be willingly withheld for one single hour from those upon whom are laid grave responsibilities from the first day."

The first part of the book is a careful psycho-physiological treatment of principles of early education. The method by which the senses may be cultivated as means to the mental, moral and spiritual development of the child is given with clearness, and should command the study of intelligent teachers and parents. The tenth chapter, written by special request of Miss Peabody and others, "The Ideal Nursery," gives an extended account of the writer's system of "drawing on the curve," "color games," and plays for specially exercising the senses; the use of the sand-table in drawing, geography, etc.; the clever arrangements of her own beautiful kindergarten in California, and is full of hints as to the use of cheap and common materials for educational purposes which would prove serviceable to our teachers.

The second part (228 pages) is a translation of all those portions of Preyer's diary which illustrate the first part of this work. The Professor made and recorded, with only two trifling interruptions, for three years, morning, noon and night, his observations which began, five minutes after birth, by testing the sense of sight. Many, Darwin among others, have observed and registered their observations occasionally, but Preyer's observations were made so systematically, and they are so acute, truthful and discriminating that they mark an epoch in the study of child culture. Published in Germany in 1882, the centenary of Frœbel's birth, they establish on a scientific basis the pedagogics of that great genius. From different points of approach Frœbel and Preyer reach the same conclusions. In his preface, given in full, he asserts that, no matter how individuals may differ, the *order* of development is the same in all; heredity is as important a factor in psychogenesis as individual activity; that scientific observation of the *child,* from the *earliest date,* must be made if education is to be a success. C.

Halifax.

For S.P.C.A. Column EDUCATIONAL REVIEW].

CHILDREN'S INFLUENCE.

It is one of the best and happiest aspects of this present civilization that in nearly all great movements designed for the progress and benefit of mankind, there are ways and means by which the children can help on the work. In the missionary field there is an army of children working with earnest endeavor to forward the greatest and highest project of the time; among the undaunted persistent temperance workers the little ones have their societies and "cold water armies; in the church are the Sunday-schools, the sewing circles, the various associations, in all of which the children bear an active part. In all public and private demonstrations they are foremost in the ranks, be the occasion one of joy or of grief. When a nation, great and glorious, rang with the plaudits of a people glad to find vent in a still echoing huzza for the benefits and blessings—the peaceful accumulation of fifty golden years — the voices of many thousands of children swelled the vast chorus. When another nation, equally great and glorious, wept over the bier of a loved and revered president, the children came in crowds to place upon his grave their leafy tributes wet with the tears of sorrowing eyes. They —" these little ones "— bring with them an added presence, an indefinable something clinging to them, since that sunny day so long ago when they ascended in crowds to receive the blessing of One whose heart was tenderest towards the sweet blossoming flowers, the helpless animals, and the innocent bright faced children. And when we think of them there it seems not only right but imperative that they should occupy an important place in the furthering of a great movement, but one the need of whose existence is a blot upon our civilization; and all who are fair-minded must shrink with a feeling of shame and pitiful humiliation from the sorrowful truth that it is absolutely necessary to have societies whose chief object is to protect the helpless and innocent from " the noblest work of God."

Such, however, being the truth, it was necessary to decide upon the best means of effecting this protection and of affording opportunities by which all who desire to do good in this particular could exercise their good will to its best and fullest extent. With this end in view, then, the Society for the Prevention of Cruelty to Animals was formed, and finding that here was another "great movement" whose progress would be greater and whose influence would be more widely felt when the children were interested, " Bands of Mercy" were formed for them, of them, and by them.

Here in St. John are a number of these Bands, each one connected with some particular Sunday-school, it being rightly decided that in this way the organizations would be more successful and the ability for a faithful rendering of the service for which they are designed much greater than if they stood alone. Would not greater advantages and more faithful results mark their progress if " Band work" were introduced in the every day life of the public schools? There, where the faculties are keener and more susceptible, where all teaching tends toward the highest elevation of the soul, the use of the Society whose watchwords are " kindness to animals," would be made so familiar that kindness would become part of life—an attribute and not an added virtue donned on and for especial occasions.

This " kindness to animals" does not only mean the care and attention given to home pets by the little ones whose charge they so often are, nor is its entire meaning to be found in that ready sympathy and just indignation that allows a warmly clad man or woman to strike a homeless cat, or exclaim against the heavy burden of a shivering, half-starved horse; but patience, forbearance and loving kindness toward one another.

Many mothers raise the objection—and justly too—that therein the children are asked to report acts of cruelty towards animals committed by the hands of play-mates and school-fellows. This is neither fair nor prudent. A tale-bearing girl or boy is looked upon by companions with horror and distrust; and, moreover, a boy or girl who could carry such a tale even to a Band of Mercy would not be far behind in similar unkind actions. The first duty of the president, then, is to instil into the minds of the children, gentleness, patience, and forbearance, to teach them that hasty words, quick blows, and ugly looks are as much " unkindness to animals " as it is to rob the nest of a bird.

Man is at best only an animal, and whatever tends to prevent the higher and more artistic side of his nature from developing its best and greatest possibilities is doing an unkindness to the whole animal kingdom. To do one's very best in the little world in which he is placed, to fulfil honestly and sincerely all the conditions of life, are all that can be reasonably expected of one, and to neglect to do so is to put a stumbling-block in the way of nature's progression. Let the children understand this fully and the need for S. P. C. A.'s and for Bands of Mercy will have ceased.

It is to be hoped sincerely that these Bands will not make a mistake so often made by the anxious and interested members of other beneficial institutions. How often one is told that the work of reform is making favorable progression, and has the full jails, the crowded reformatories and asylums, the list of cruelties reported in the daily papers, pointed out as true evidence of this reform! If empty jails, reformatories and asylums, and no list of barbarous atrocities could be shown, then would reform be complete and perfect, then would man feel that some progress had been made towards the ideal life as possible to-day as when the Christ walked upon the Galilean shore preaching the simple doctrine of good will toward all men.

It is pleasant to think of the children who are akin to the flowers and animals and all the tender innocent things of earth, being among those who are working to bring about that golden age, when

> " Man to man as brothers shall
> Each to each be bound."

And when from the most remote corners of the world eager hands and voices will welcome the progress first led by a little child. M.

St. John.

THE TEACHING OF DRAWING.

In a paper on the teaching of drawing, read before the New York College of Preceptors by T. R. Ablett, Esq., the educational value of the subject is brought out with a strength and clearness that render the paper of more than usual interest to our educators. Mr. Ablett considered drawing simply as a means of education, and explicitly set aside any treatment of it as an accomplishment or as a training for artists. He pointed out that the mode of instruction in drawing, taken in this sense, would naturally differ from that followed when the production of artists was aimed at, and must be adapted to school-children, most of whom have no special aptitude and little time for practice. To raise drawing to its proper position, we must prove that it is one of the bases of education, and should be taught to all children, whatever their future vocation. We must also prove that it can be taught by collective methods as readily as arithmetic or reading. The speaker then summarized the educational advantages of drawing as follows: I. It brings into active use certain faculties and powers of the mind which can be reached to an equal extent in no other way. For example: correct ideas of proportion and scales are developed, the graphic memory is improved, accuracy in observing is promoted, the powers of description are increased. Although drawing is a universal language, yet few are able to use it. II. Drawing facilitates the acquirement of the simple elements of education. For example: spelling demands a power of remembering the look of words, since in English the sound is not always a trustworthy guide. The improvement of the graphic memory will aid in learning to spell. Again, a child may be taught to draw before it is possible or desirable that he should learn to write. The pen is the worst of drawing-tools, and should not be the first to be put into the hands of children. The earlier use of simpler drawing instruments will facilitate learning to write. Again, drawing teaches the arithmetic of space, as figuring teaches the arithmetic of numbers. There is no reason why the child should be taught the one and not the other. The arithmetic of space may be taught as soon as a child can use a ruler and can understand something of drawing to scale. Furthermore, facts which in figures make no appeal to the mind can be readily grasped by means of drawing, especially if these are made by the pupils themselves. In all these ways drawing actually improves the mind's capacity for learning other subjects.

As a rule, the teaching of drawing is in a very backward state; for art teachers, so called, as a rule are poor teachers, and the whole instruction in this branch has been hampered by the prevalent belief that no one should learn drawing who has not a special talent for it. Then, too, collective methods of teaching have not been properly developed. To accomplish the last-named object, it is essential that the members of the class be so arranged that each one can have approximately the same view of the object to be drawn. Object-drawing is the most difficult branch of the subject to be taught collectively, but it can be done. For good class teaching of object-drawing, three vital principles must be observed: *(a)* the object must be a large one, that all can easily see; *(b)* all members of the class must obtain approximately the same view of the object; *(c)* the teacher must be acquainted with class management and with the subject, and able to demonstrate principles and methods with ability and enthusiasm.

Mr. Ablett then presented the pedagogic aim of drawing in the different grades. In Class 1 it is (1) to develop accurate observation, (2) to connect writing and drawing, (3) to ward off color-blindness, (4) to cultivate the perceptions, (5) to teach outline-drawing from real objects which present no difficulties in foreshortening; in Class 2, (1) to call attention to the difference between the real and apparent forms of simple objects and curves, (2) to cultivate the graphic memory, (3) by the dictated drawing to insure a knowledge of art terms and give facility in working from verbal instructions; in Class 3, to teach the leading principles of drawing in outline from the things of everyday life; in Class 4, to develop a useful power in drawing from rounded objects (plants and casts) that will serve as a stepping-stone between drawing from simple objects and drawing from the antique; in Class 5, to give a knowledge of shading from real things (this will assist the pupil materially in acquiring the principles of painting, should he ever want to do so); in Class 6, to enable those who have passed through the preceding classes to begin the study of the higher branches of art.—*Science.*

"How do you spell deceased?" asked the sergeant of the doorman.

"With a *z*, I guess," returned the doorman.

"Come off! There is no *z* in deceased. Where is that dictionary?"

"I don't know, sir. Sergt. ——— was looking for it last night."

"That's tough. I'm not sure about that word, and I don't want to make a mistake."

"Follow Sergt. ———'s plan, then," suggested the doorman. "Whenever he gets stuck on spelling a word he writes it phonetically, and quotes it."

ASA GRAY.

The name of Asa Gray, who died at Cambridge on the 30th of January, will long be cherished by the students of American botany. His life was an example of untiring industry and patient research. His enthusiasm has been inspiring to many a student, and no one who came in personal contact with him, or to whom he addressed letters of assistance and encouragement, will ever forget the magic of his cheerful and hearty sympathy. He combined with rare mental endowments the ardent enthusiasm which distinguishes the true teacher of science. For more than half a century his distinguished labors in behalf of American botany have produced results which only the most tireless industry and ability could accomplish. His elementary works, "Elements of Botany," "How Plants Grow," "How Plants Behave," "Lessons in Botany," and "Structural and Systematic Botany," are models of precision, simplicity and comprehensiveness. His "Manual of Botany of the Northern United States," which has passed through five editions, has been in the hands probably of every American and Canadian botanist. His "Text-Book of Botany," issued during the past year, is a revised edition of "The Lessons." Two volumes of the "Genera of North America" have been published. His "Field, Forest, and Garden Botany" was published in 1868. The great work of his life is the "Synoptical Flora," which, as far as published, consists of a volume of 974 pages on the gamopetalous orders. In addition to these he has published other works and numerous memoirs and papers, all of which have gained for him fame as a botanist which the coming years will increase, and when it will be fully realized what he has accomplished for American botany.

Dr. Gray was crowned with diplomas and honors from all the principal universities of Europe, and during the past summer, while travelling in England, received degrees from the universities of Oxford, Cambridge and Edinburgh. A host of friends in Cambridge and throughout the country will feel that his death has extinguished a bright and cheering light in the world of thought, and has removed a most cherished and valued friend and companion.

LABRADOR TEA.

The *North Sydney Herald*, Cape Breton, concludes a short article on this subject as follows: "Evidently the people of Cape Breton are in ignorance of the growth of this tea. If the REVIEW writer be correct our people are losing a grand opportunity of making fortunes out of this wonderful plant. Let an investigation be had." The *Herald* puts the case much stronger than the REVIEW; yet there is nothing, we suppose, like putting it strongly in order to draw attention. We publish the following letters, which have appeared in the *Halifax Chronicle* since the publication of our article, as they are valuable contribution to our knowledge of the subject.

To the Editor of the Chronicle:

SIR,—Your article published near the close of the year on the so-called Labrador tea plant, which is so abundant in Nova Scotia, has elicited useful notes from Principal McKay, of Pictou, and Mr. Fox, whose experience in the Magdalen Islands renders the information he furnishes of especial value. There is one point to which it seems desirable to call attention. If the leaves are collected at this season, they may probably yield a strong resinous or turpentine flavor not likely to be agreeable to any one. But if gathered in early summer time, whilst the wool on their lower surface is pale, and the secretion has not lost its more volatile constituents, they may furnish a more agreeably flavored beverage. Actual experience is the best guide in such matters, and if Mr. Fox will kindly tell us more fully the way in which the tea is prepared by those who use it, his hints will no doubt serve to obviate failures on the part of those disposed to make trials. The particulars required are such as the following: Season for gathering the leaves, whether only young leaves are used, mode of drying, rapid or slow, quantity used in infusion, time required for infusion and whether the tea is to be put into cold water or heated, or to be at once covered with boiling water, as in case of ordinary tea. Also, whether it should be actually boiled, or care taken to prevent boiling. I hope Mr. Fox will pardon me for suggesting these points as necessary ones to be known.

We have enough of the plant around the shores of Halifax harbor to supply our own wants, and all Massachusetts too, if the old taste should happen to return.

Your obedient servant,
GEORGE LAWSON.

Chemical Laboratory, Dalhousie College, Halifax, Feb. 14.

P. S.—Mr. Fox properly mentions two species of *Ledum*. This suggests a further inquiry: are both used for tea? The one credited by Sir John Richardson as yielding tea is the northern or arctic, narrow-leaved species, *L. palustre*, the Ka-ki-ki-pukwa of the Crees. The broad-leaved species, *L. latifolium*, which grows in the wooded districts, is not credited as a tea plant by Sir John. This, however, may be an omission. The species we have in Nova Scotia is *L. latifolium.*

To the Editor of the Chronicle:

SIR,—In reply to Professor Lawson's letter, published in your issue of yesterday, on the so-called "Labrador tea plant," requesting some further particulars in reference to the proper season for gathering the leaves and mode of preparing the tea, etc., as observed by me during my residence at the Magdalen Islands, I beg to say that the leaves should be gathered during the summer months, when the blossoms of the plant are fully expanded. The younger leaves are to be preferred, and should be dried quickly either by being lightly strewn in a dry warm place in the open air, or indoors, subject to a gentle heat, and after drying put away in paper bags for use.

The tea may be made either by boiling or infusing the leaves; I prefer the latter as a less quantity of the resinous matter of the plant is extracted. The quantity to be used for an infusion depends upon the strength required and may be found by a little practical experience as in case of Chinese tea.

The "French Acadian" family with whom I resided for some months, who used this tea as a daily beverage, had two modes of preparing it. One was by simply infusing the leaves in a tea pot, by pouring *boiling* water over them, as is usually done with other teas, and the other way was by making an infusion in the ordinary way and straining it into another vessel; then adding milk, sugar or molasses, to suit the taste, and boiling all together for a few minutes before using—this latter I found to be very palatable.

Notwithstanding that Sir John Richardson has mentioned but *one* species of Ledum as yielding tea *(L. palustre)*, both varieties are used; that partaken of by me, as referred to above, was prepared from the broad leaved *Ledum (L. latifolium)*, which is found so abundant in Nova Scotia. It is possible that in the cold arctic region and Labrador the effects of these plants may not be the same as in our milder climate. I do not know if they have been examined chemically. To those who may be disposed to test their qualities I would suggest their using a mild infusion, and not condemn it from simply "once tasting." It is not to be assumed that the Labrador tea plant is about to supersede the Chinese; nevertheless it may be satisfactory to many to know that in case of necessity we have a substitute for it within our own Province.

Your obedient servant,
Halifax, 16th February. J. J. FOX.

SPELLING REFORM.

The *Educational Journal* of Toronto had a capital paper on the spelling reform last month, from which we make a few extracts:

"A few years ago, Prof. Zupita, of the University of Berlin, in the course of his lectures on English Philology, having fully discussed the origin and development of all the old English or Anglo-Saxon vowels and consonants, before proceeding to the next division of his subject, uses the following remarkable words: 'I shall now proceed at once to deal in the same way with Modern English sounds, as I have been doing with Old English, passing over entirely the period known as Middle English, for the simple reason that Middle English and Modern English orthographically are practically identical.' On another occasion the professor told his students that English pronunciation had so greatly changed since Elizabeth's time, that if Shakespere and Lord Tennyson could meet in the streets of London, and should speak English as they had respectively been taught to speak it in the schools of their day, they could scarcely understand each other. And yet Lord Tennyson's orthography is almost exactly the same as Shakespere's. In other words, the same spelling, symbolizing, in one age, one system of articulate sounds, is made in another age, to represent what, as far as mere sounds are concerned, is almost an entirely new language."

"The London *Times*, having discovered that its persistent adherence to the extra letter of the old spelling *our*, cost it about $2,500 a year, is about to give it up and come over to the majority."

"It ought to be a source of gratification to all students of our noble English tongue, to all who desire to see it speedily become the universal language of commercial intercourse, to know that the ablest scholars in England and America have for years been making our spelling a subject of profound study, and seeking the simplest and most effective way of removing the multitude of needless difficulties that meet at the very threshold and tend to discourage every one who tries to learn our written language."

TEACHING GONE MAD.

Will the reader please cast his eye upon the following questions: 1. How can it be proved that nicotine is a poison? 2. Why are cigarettes especially harmful? 3. Is alcohol a food? 4. What is the effect of disuse upon the muscle? 5. Under what names is opium sold? 6. Under what names is alcohol drunk? 7. What is the difference between a food and a poison? 8. Is anything gained by changing from one narcotic to another? 9. What is the effect of beer as a drink? 10. How does cheerfulness help the muscle? These are the questions given as a test in physiology in the public schools of a prominent eastern city. They are not addressed to young men about to leave school. No, they are asked of little boys and girls of from eight to ten years of age. This is the examination paper at the end of the first year's elementary instruction in physiology. Of ten questions, eight relate to drinking and smoking: the physiology is a mere side issue. These children, who ought to have about as much knowledge of such matters as they should of the methods in vogue at the stock exchange, are actually forced to learn by rote the details of human vice; and that, too, under the name of "physiology," the only science which they learn. Unconsciousness, *naivete*, is the symbol of childhood. The fact that physiology, even if well taught, tends to destroy this trait is the chief objection to its early study. Instruction, such as the above implies, crushes the most valuable trait in the child, directs its curiosity to what is morbid, and forces into precocious development all its dangerous elements. Not enough that the newspaper and the dime novel proclaim in glaring colors the story of crime and sin: some notion of the perversity of human nature must be mixed with the food of babes. That the result of this teaching is to excite in the children a morbid curiosity to experiment for themselves in such matters; or (with the boys) to regard the whole thing as a lesson in "goody-goodyness," to which they forthwith decide to show themselves superior; or to regard their father, who takes his glass of wine at dinner, as an incipient criminal,—this could easily have been foreseen, and goes without saying. If there is one method better than all others to produce a race of drunkards, this has good claims to that distinction. If there is a degree of wrong in such superlatively perverse methods, then it is still worse that the fair name of science should be outraged in this cause. Not only that this kind of teaching necessarily depends upon catechism methods (that the answer to the second question, for example, is to read that the especial perniciousness of cigarettes is due to the fact that they are made of decayed cigar stumps), but that the entire idea of science thus implanted is as wrong as it well can be. Better far revert to the old days when there was no science on the curriculum than have science thus taught. The crowning educational virtue of science is that it leads to the use of scientific methods of teaching: this usurper chokes up all possibility of an interest in the scientific. The "temperance" question is doubtless one of the most important with which our age has to deal; sufficiently important, perhaps to make some consideration of it in the public schools a legitimate proceeding, but it must be done at the right time and in the proper way. Nothing can excuse the conversion of a text-book on physiology into a "temperance" tract: nothing can excuse the sacrilege of presenting this story of disgusting vice under the name of "science."—*Science.*

PERSONAL NOTES.

Thos. J. Forsythe, B. A., of Belfast, has been appointed Vice-Principal of the Methodist College, St. John's, Newfoundland. He is an honor man in metaphysics and logic.

Professor Denton, A. B., of the Halifax Academy, has been appointed Lecturer in Geology in the Nova Scotian Summer School of Science. Professor Denton has lately attended the Summer School at Harvard University.

Inspector Oakes is visiting the Fredericton schools this week.

Inspector G. W. Mersereau finished his examination of the Restigouche schools the last of February. In his report for 1887 Mr. Mersereau refers to the excellent work done in the Dalhousie Grammar School and the Campbellton Superior School; and it is a pleasure to note that on his recent visit he found these schools had improved on their record of last year in a marked degree. The Inspector is this month visiting the schools of Gloucester.

Inspector Lay has recently visited this part of his inspectoral district and reports improvement in educational matters. Mr. Lay is an efficient and faithful officer. It is to be hoped that he will have the hearty co-operation of trustees and ratepayers in all his efforts at reform.—*Wallace, N. S., correspondent of Sackville Post.*

SCHOOL AND COLLEGE.

St. Francis Xavier College, Antigonish, is increasing its chemical laboratory facilities and enlarging its equipment.

From the Antigonish *Casket* we learn that President McNeil, of St. Francis Xavier, has purchased an organ for the use of the College.

Acadia College is keeping well to the front. Last summer it was the seat of the Provincial Summer School of Science; last month of the N. S. Fruit Growers' Association. It gave two Superintendents of Education to Nova Scotia; and the Principal and two Professors of the Nova Scotia Normal School are numbered among its alumni.

Dalhousie College is preparing for a grand house-warming. A splendid conversazione is expected to come off shortly. Some writer proposes that the name be changed to "Halifax University." If Halifax gives it a "christening gift" of say at least $100,000, all right. Not otherwise.

QUESTION DEPARTMENT.

A. K. B.—1. What is a mineral rod? 2. How does it point out the presence of minerals?

1. A superstition of the nineteenth century. 2. By accident or the conscious direction of the manipulator.

"ASTRONOMER."—Supposing a mass, say one pound of meteoric iron, should fall towards the earth with the average meteoric velocity, say of 30 miles per second; how would you calculate the heat produced by its impact?

Velocity equals 158,400 feet per second, equal to that acquired by a body falling from rest 392,040,000 feet if g always $= 32$. This energy converted into heat at Joule's equivalent (772 foot-pounds equal to heat which would raise one pound of water one degree Fah. in temperature) would be sufficient to heat one pound of water over 507,000 degrees Fah. But the specific heat of iron is about one-tenth of water. The mass of iron would then be raised about 5,000,000° Fah. in temperature. 3,000° is about the temperature of molten iron.

M. B.—Please name the author and comment on the thought of the following passage:

> "Yet I doubt not through the ages one increasing purpose runs,
> And the thoughts of men are widened with the process of the suns."

The passage is from Tennyson's "Locksley Hall." The poet seems to have in view the desire of the human mind for a broader culture, a development of what is good and noble in man's nature; and this "increasing purpose" in the higher conception that prevails of the Christian religion, as shown in the great missionary undertakings, the organization of humane societies, the tendency towards the settlement of disputes between nations without resort to the sword, the spread of scientific knowledge in its broadest sense—thus are the thoughts of men widened.

J. C.—Where will I get a good work on entomology? What author is considered best? and what is the cost of the work?

"Packard's Guide to the Study of Insects" is probably the best and most complete work for our students. Its price is $2.50.

R. S., Lutes Mountain, N. B.—Is the enclosed rock a fossil?

It appears to be a fossil of carboniferous age. It is probably a portion of the trunk of a tree which was buried in a sandstone formation, and therefore not so completely preserved as to form as if it were imbedded in clay. The dark color is due to carbonaceous matter, and portions of its surface are covered with a dense crop of minute hexagonal crystal of silica, which cut glass with great ease.

BOOK REVIEWS.

ELEMENTARY CLASSICS, MacMillan & Co., London and New York. CÆSAR, HELVETIAN WAR, AND GALLIC WAR, Book VII. OVID, STORIES FROM THE METAMORPHOSES. LATIN ACCIDENCE AND EXERCISES. VIRGIL'S ÆNEID, Books VI. and IX. ARRIAN SELECTIONS. XENOPHON'S ANABASIS, Book I.

It cannot be denied that much has been done to smooth the path of beginners in the study of the Latin language. Grammars, introductory readers, and translated editions of the classics generally read in school or college, have been issued from the press both in England and America in great abundance. There is scarcely a difficulty in text, construction or matter that is not explained, or, at any rate, towards the understanding of which contributions are not offered. Geographical references and historical allusions are fully illustrated, and maps and plans of great merit accompany the remarks and impress them upon the mind as no other mode of presentation could possibly do. Truly, O boys, your fortune is pleasanter than that of your predecessors of thirty or forty years ago! But whether the results of the present system will be commensurate with the assistance which has been so generously extended, and the efforts made to render the study attractive and useful, is a question which, by some of us, is difficult to answer in the affirmative.

There is no desire on our part to undervalue the scholarship evidently possessed by the editors of these or other editions of Latin authors, but what we have our doubts about is the wisdom of putting such books in the hands of boys to aid them in their home studies. The average boy only thinks of the translation, and when he has got the *sense* of the passage he is perfectly satisfied. He does not trouble himself about or make an effort to remember the grammatical or other remarks which accompany the translation; he has got all he wants, and there the matter rests. But the mental discipline, secured by the habitual and strenuous struggle with difficulties and the confidence in one's powers acquired by a mastery of them, he misses entirely. The proximity of the key to the difficulty is a temptation too powerful to be resisted, and before he has fairly grappled with it, and while only conscious of its stubborn and obstinate character, he consults the notes and the obstacle to his progress is removed. Every teacher knows that difficulties surmounted in this way do not permanently promote the advancement of the student, and that facility in translation and an accurate acquaintance with the Latin language are not thus obtained.

And again: We do not consider that annotated editions of the classics in the hands of boys are of any assistance to good teachers, but place them at a decided disadvantage. Every hard construction, every peculiar word, reading or allusion is commented upon. The editor has anticipated almost every remark which the teacher could make in the progress of the lesson, and has, without producing any permanent impression, deprived the observation of the teacher of the interest which arises from novelty, and that concentration of attention so indispensable in the student. And thus it not unfrequently happens that the teacher loses all independence, and, instead of following the dictates of his own judgment, he becomes the expounder of the comments of the annotator.

Nor do we commend the plan of appending a vocabulary to the text. This, again, is supposed to save the time of the pupil. But the advantage is more apparent than real. The exercise involved in turning up the word in a good dictionary, selecting its English equivalent, and observing the quotations which exemplify its uses, is lost, and a familiarity with differences in meaning between words which are closely allied is not attained. We do not know of any better plan for boys to adopt in the preparation of their Latin lesson than to provide themselves with a dictionary, such as "Smith's," a grammar and a good text without note or comment. The teacher, if he be qualified for his post, will, when the author is read in class, elucidate all difficult passages, review points in grammar which may not have been observed by the pupil, and communicate that attractiveness to the subject, which can never be done so effectively as by the living voice of an earnest and inspiring teacher.

Holding these views we do not look with much pleasure upon the books mentioned at the head of this article. They are doubtless good of their kind, but if the student has an adequate knowledge of Latin grammar, the most of the notes are unnecessary. The same objection, however, cannot be taken to those of a geographical, historical, or archæological character, for they are certain to arouse the interest of the student, and a classical dictionary of biography and geography, or a hand-book of Roman antiquities is not always easily obtained. The maps and plans are very good and must prove helpful to the student. But whilst we commend the effort to prepare a graduated reader from the first book of the "Gallic War," and confess that the editors have been particularly successful in their gradual introduction of passages in oblique narration, there is a serious defect in the notes and vocabulary, in as far as there are many words, the quantities of whose vowels are not marked, and must necessarily be doubtful to the beginner. We are of opinion that where notes and a vocabulary are annexed to an addition of a Latin author, the marking of all the vowels by broad and distinct lines ought to be a special feature. And surely this ought to be the case in a geographical index, but it is here that the omissions are most noticeable.

Notwithstanding the many editions of the Latin classics that have appeared during the last twenty years, we must express our preference for the Oxford texts. And if the study of the Latin language is, as we believe it to be, one of the best means of cultivating the intellect and refining the taste, it ought to be pursued on such a plan as will best conduce to this result. And surely that plan cannot involve the adoption of measures by which every difficulty, as it occurs, is solved for the student, and no opportunity is left for sharpening his intellect by grappling with obstacles which demand for their conquest all the resources of his knowledge and ingenuity. With the Oxford texts, a lexicon, a grammar, and, if possible, a dictionary of geography, biography, and archæology, he should be well equipped for the work of preparation for his class, and he will soon learn that the training thus acquired will be of [illegible] to him as he proceeds; success will attend his efforts, and the pleasure which springs from success will be his portion.

A Course of Quantitative Analysis for Students, by W. N. Hartley, F. R. S., Professor of Chemistry, etc., Royal College of Science, Dublin. London, MacMillan & Co., and New York, 1887. This is a capital little book of about 240 pages. The preface opens with the quotation from Fresenius, "One may be a good analyst without having tried *every* method, or determined *every* body." It opens with practical instructions in general manipulation, directions and cautions. Then it takes the student directly into quantitative analysis, the subjects chosen first being admirably adapted to the demonstration of the atomic theory and the discovery of chemical formulæ. We cannot do better, to give an idea of the practical value of the work to the reader, than noting the subjects in order: 1. Determination of lead in litharge. 2. Determination of the weight of magnesium equivalent to 108 parts of silver. 3. Determination of water and copper in crystals of copper sulphate. 4. Of the composition of copper oxide. 5. Copper equivalent to 108 of silver. 6. Iron equivalent to 108 of silver or 31.65 of copper. 7. Estimation of sodium in rock salt. 8. Estimation of chlorine in rock salt. 9. Estimation of sulphuric acid in sulphates. And so on for the first third of the volume. Then follows a section on volumetric analysis, concluding with: 31. Estimation of phosphoric acid. 32. The estimation of sugar. 33. The analysis of urine. Then follows a section on *Technical Analysis*, which is succeeded by over sixty pages on the analysis of alloys and complex minerals, the whole closing with a set of useful chemical tables. The whole subject is treated in a concise, simple, and most admirable manner.

A Treatise on Algebra, by Charles Smith, M. A., of Cambridge University. London, MacMillan and Co., and New York, 1887. This is a fine volume of over 570 pages, got up in the usual good typographical form of MacMillan & Co. It conveys the impression of being well adapted to the algebraic student. It treats the subject of indices, surds, imaginary and complex quantities pretty fully and very neatly, but we would prefer seeing a much larger selection of well graduated exercises in these chapters. As usual in many algebraic treatises, these subjects are left until quadratic equations are mastered. The chapters following treat of: 15, square and cube roots; 16, ratio and proportion; 17, the progressions; 18, systems of numeration; 19, permutations and combinations; 20, the binomial theorem; 21, convergency and divergency of series; 22, the binomial theorem—any index; 23, partial fractions, indeterminate co-efficients; 24, exponential theorem, logarithms, logarithmic series; 25, summation of series; 26, inequalities; 27, continued fractions; 28, theory of numbers; 29, indeterminate equations; 30, probability; 31, determinants. The titles of these chapters indicate their scope. The treatment of each subject is very concise and orderly. The chapter on determinants will make it interesting to some of our college graduates, who as a general rule, neglected this more modern off-shoot of the general science of algebra. We understand that of late determinants are taken up in the first year algebra of the university of Dalhousie at Halifax.

A Latin Grammar, by Thomas Chase, Ltt.D , LL.D. Six Books of the Æneid of Virgil, with notes and vocabulary, by the same author. Eldredge & Brother, Philadelphia.

In the August number of the Educational Review we had the satisfaction of commending to the notice of our readers the "First Year in Latin," by George Stuart, A.M. The two books mentioned above belong to the same series of classical works, and are distinguished by the same admirable characteristics which we observed in the other. The grammar is excellent. Whilst there is a very full and accurate statement of the facts of grammar, they are not obscured by the mass of philological information which we too frequently find in advanced grammars. The arrangement is not inferior to the matter, and the clearness and conciseness of remark and definition will undoubtedly secure the approbation of teacher and student alike. The attention which is paid to the quantity markings is as conspicuous here as in the former work, and the use of different kinds of type is a plan by which the observations and rules are impressed upon the mind. Where every section is well done, it becomes a matter of some difficulty to select those that please us best; yet we would refer particularly to the sections which treat of the *subjunctive mood* and *oblique narration* as being scholarly and complete; the chapter on *prosody* as invaluable because it is practical, and to the carefully prepared *index* for reference. We can unhesitatingly say that with such a grammar as this, and a good lexicon, a student of fair ability ought to make his way successfully through the works of any of the Latin authors generally read in school or college, without the aid of note or comment or any of the other less legitimate means of assistance. The "Six Books of the Æneid" are, like the other books of this series, beautifully and correctly printed, and are consequently very pleasant and satisfactory to use as texts. Of notes and vocabulary we have said enough already; but we must add, respecting this edition, that we are never at a loss respecting the quantity of the vowels of the Latin words or of the proper names which occur in the text. This alone will, we have no doubt, recommend this edition of the Six Books of Virgil to the favor of many teachers and students.

Joh. Amos Comenius's Visible World, or, a Nomenclature, and Pictures of all the Chief Things that are in the World, and of Men's Employments Therein; in above 150 copper cuts. Written by the author in Latin and High Dutch, being one of his last essays; and the most suitable to children's capacity of any he hath hitherto made. Translated into English by Charles Hoole, M. A., for the use of young Latin scholars. The eleventh edition corrected, and the English made to answer word for word to the Latin, etc., London, etc., 1728.

This is a portion of the ornamental title page of an early English edition of one of the classic works on language-teaching, by Johann Amos Comenius, first published in 1658. He was born 1592, in Moravia, and was the author of many works which obtained for him the position of a leading educational reformer in the literature of the world. His *Janua Linguarum Reserata* (1631), has been published in *twelve* European languages, and also in Arabic, Persian and Turkish. His reputation was so widely spread, that from old Hungary he was invited in 1682 to draw up a scheme for the management of the schools of Sweden, and in 1641 was invited to attend a commission which the English Parliament intended to appoint to reform their educational system. And in 1654 he was solicited to become President of Harvard College, on the resignation of President Dunster. The work we have under consideration is shortly known as the *Orbis Pictus*, and is the best illustration of the Comenian method of teaching languages, which he seems to have been the first to adopt.

This work has just been reprinted by C. W. Bardeen, 83 and 85 Clinton street, Syracuse, New York, in a fine antique looking volume of about 200 pages. He has reproduced the original engravings exactly with all the peculiarities of the skill of the engravers of two and a quarter centuries ago. This, in itself, is an interesting feature. The lessons are conducted by question and answer on the engraving alone, the English and Latin being in parallel columns. By reading through this picture book, which commences with the letters and takes in a great multitude of the most common things and ideas in the world, a student may acquire a greater command of colloquial Latin than by reading all the works of Cicero. It is the most delightful book which the boy who has just got through the verbs in any elementary Latin grammar can read. He can read without a dictionary and enjoy the pictures. As it is an educational classic every teacher should have it in his library, and if he has it in his library, he cannot help enjoying it.

Industrial Instruction, by Robert Seidel, Mollis, Switzerland. Cloth, 170 pages. Price 80 cents. D. C. Heath & Co., Publishers, Boston, New York and Chicago. Besides a skilful refutation of the objections that have from time to time been raised against industrial instruction in the schools, the author has presented in this book a philosophical exposition of the principles underlying the claims of hand-labor to a place on the school programme. The author certainly makes a strong plea for industrial training.

A Systematic Table of Canadian Birds, by Montague Chamberlain, St. John: J. & A. McMillan, publishers. This work, which is just being issued from the press, is for the purpose of classifying the birds found in the Dominion, and furnishing a check-list for students. The work will be of great assistance to active ornithologists, who are thus placed under additional obligations to Mr. Chamberlain for this excellent table for systematizing their labors.

N. M. Shephard, 85 Nassau street, New York, sends us his splendid sheet of cuts of *medals*, etc., for schools and colleges, etc.

L. S. Foster, stationer, printer, etc., No. 35 Pine Street, New York, has our thanks for ornamental calendars and printed cards.

Jas. W. Queen & Co., 924 Chestnut Street, Phidadelphia, Pa., U. S. A., have our thanks for catalogues of microscopic, optical, physical and electrical apparatus.

BOOKS RECEIVED

SCRIPTURE READINGS for High and Public Schools, authorized by the Education Department of Ontario.

COMMON SCHOOL LAW, by C. W. Bardeen, Syracuse, N. Y.

The MANUAL TRAINING SCHOOL, its aims, methods and results, published by D. C. Heath & Co., Boston.

GOLDSMITH'S TRAVELLER AND DESERTED VILLAGE, with notes; THE TEACHER'S COMPANION TO MACMILLAN'S PROGRESSIVE FRENCH COURSE; DIGEST OF FAWCETT'S MANUAL OF POLITICAL ECONOMY; MACMILLAN'S PROGRESSIVE FRENCH COURSE, 1st year; FLORIAN SELECT FABLES; SCHOOL READINGS, in the Greek Testament; SCOTT'S MARMION, with introduction and notes; GREEN'S SHORT HISTORY OF THE ENGLISH PEOPLE;—All published by MacMillan & Co., London and New York.

EXCHANGES.

Wide Awake, is a bright readable magazine for children and young students. The March number is finely illustrated, and filled with excellent articles. ...*Vick's Floral Guide* for 1888 is an admirable number, and should be in the hands of those who are soon to commence gardening. The terms on which it may be obtained can be seen in another column....*The Puzzler*, a new monthly magazine of games and problems, is issued by N. D. C. Hodges, 47 Lafayette street, New York... *Monographs of the Industrial Education Association*, Vol. I., No. 1., has been received. This number contains two excellent articles on Manual Training, one by D. C. Gilman, LL. D., President of the Johns Hopkins University, and the other by H. H. Belfield, Ph. D., Director of the Chicago Manual Training School ...The *Bookmart* for March, published at Pittsburg, Pa., is the literary reader and bookbuyer's useful information about books....*The Popular Science Monthly* for March, comes to us richly freighted with the results of the newer and investigation in the important field which it represents. Among a number of interesting articles are glimpses of Darwin's Working Life, The Indians of British Columbia, Weather Prognostics, and others equally instructive ...*St. Nicholas* for March is a finely illustrated number. The article on "A Pig that nearly caused a War," will be read with interest by students, as giving the particulars of the San Juan dispute between England and the United States... The *Century* for March, in addition to its usual series of interesting illustrated articles, discusses some educational questions, and goes straight to the point in this style: "There is no time given in our schools to the development of a strong and symmetrical body; no time to all the reasoning faculties to draw the breath of life; no time for anything but to crowd memory with facts, the *why* of them all being as utterly unknown to the pupil as it is to the wooden desk upon which he piles his many books. * * * The remedy for this condition of affairs lies in the creation of a public sentiment against the universal and destructive 'cramming' process."....*The Swiss Cross* for March is interesting as usual. The leading paper is a graphic illustrated description of a "Hindu Town," in Trinidad, followed by another on the "Cataracts and Rapids of the Kongo." There is the usual number of valuable shorter articles... *The King's College Record* is the most artistically got up of any Canadian college paper we have seen..... *The Acadia Athenæum* contains a powerful appeal from the Alumni Association, to increase the financial resources of the college ...The last *Dalhousie Gazette* contains the first part of a paper on the reformed spelling recommended by the joint Philological Societies of England and America. The reformed spelling is used.

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EDITORIAL NOTES.

FRIDAY, 18th of May, has been selected as Arbor Day for New Brunswick schools.

THE next number of the REVIEW, which ends the first volume, will be issued about the 10th of May. Contributors to its colums will oblige us by handing in their favors as early as possible.

PROFESSOR ROBERTS of Kings College read before the Historical Society of Nova Scotia an extremely interesting paper on the "Aroostook War" between New Brunswick and the State of Maine in 1839. He has also thrown some new light on the Ashburton Treaty, which shows that New Brunswick and not the State of Maine gained the advantage in the division of the disputed territory.

Garden and Forest, a new weekly journal, devoted to horticulture in all its branches, landscape gardening, plant diseases, and insects injurious to vegetation, has made its appearance. With its talented corps of editors and contributors, it promises to be an admirable publication for the purposes in view. See the advertisement in another column for an enumeration of its many excellent features.

A PUBLIC meeting was held in Orpheus Hall, Halifax, on Friday evening, April 6th, under the auspices of the Frœbel Institute of Nova Scotia, for the purpose of bringing to the attention of the public the advantages of kindergarten instruction, especially in the cities and towns. W. C. Silver, Esq., presided, and opened the subject in a short address. He was followed by Mr. Lawrence, M. P. P., of Truro, Hon. Mr. Gillivray, M. P. P., Antigonish, Miss Woodcock, Principal of the Truro Kindergarten, Principal MacKay of Picton, and Mrs. Condon, President of the Institute. Special reference was made to the superior Kindergarten of Truro. A room has been given it by the government in the normal school building. The institution is supported as yet principally by the people of Truro. The province receives benefit from it through an arrangement by which the normal school students visit it regularly, in relays of about a dozen at a time. Its principles will in this manner be introduced to some extent into the primary schools of the province. The subsidy promised for a quarter mile of railway would be a great boon to a central school of this kind in connection with the normal school; and would eventually benefit the whole country to a much greater extent than even a whole mile of some local railway.

SECONDARY EDUCATION.

In our last issue there was briefly outlined from the report of the New Brunswick schools, a plan for the establishment of five high schools for the promotion of secondary education in the province. In submitting the plan, Chief Superintendent Crocket expressed the hope that the Legislature, at its approaching session, might frame a bill in accordance with his suggestions, to become law on the first of January next. The Legislature has dispersed without taking any action in the matter. The additional outlay of about $6,000 per annum in the present straightened finances of the provinces may have been one source of reluctance on the part of the Legislature in dealing with the question. In the meantime, there is ample opportunity to examine into the proposed change in secondary education, which seeks to do away with the county grammar schools and establish in their stead five thoroughly equipped high schools at St. John, Fredericton, St. Stephen, Moncton, Newcastle.

In addition to the increased expenditure there are other important considerations to be taken into account, when the province is asked to provide for a more efficient system of secondary education. Chief Superintendent Crocket well draws attention to the fact that our secondary school course "needs enlargement, and needs it chiefly on the scientific side." He would have a scientific course as ample as the classical in these schools. But why undertake, since the schools are to be established in sections and must necessarily draw pupils from distant homes, to have two "ample" courses under one roof? The curricula of these schools would be overburdened if the attempt were made to teach a classical as well as a broad scientific and English course. The extra expenditure required to maintain two such courses would not be justified by the results. Let the wants of the people in each high school section be the chief basis on which the curriculum of that school shall be framed.

The complaint of one of our superintendents, referred to in another column, that the school programme is in most cases adapted to the few who are preparing to enter the professions, is unfortunately too general and too well grounded. In framing a course of secondary education for the province, would it not be well to consider more the requirements of certain sections, and instead of having the same curriculum for each school, to modify the course so as to meet special needs? Let the Collegiate School, Fredericton, have a full classical course and be a feeder of the university, by shaping its curriculum to the *present* requirements for matriculation to the University of New Brunswick. In St. John it might be advisable to carry on the two courses—classical and scientific; but in any case there should in this city be ample provision made for carrying out a thorough modern course, embracing the requirements of a sound commercial education, with a more advanced course in science, English and modern languages. In the other sections let the curricula of the schools also be determined by the requirements of the people. Science with special reference to its bearing on agriculture and horticulture, should be taught with greater fulness, and the classics should give place in great part, to a thorough course in English, science and practical mathematics.

There is another feature of the proposal to establish the high schools that should be thoughtfully considered. They are to be located in wealthy districts where the inhabitants have already evinced a determination to provide a reasonably good system of secondary education. Under these circumstances it is a matter for consideration, whether a portion of the money to be drawn from the provincial treasury for the support of the proposed high schools could not be applied more advantageously in providing a grant for a provincial school of agriculture and a technical school. Such institutions are springing into vigorous growth on all sides.

These schools, if established on a small scale at first, and perhaps in connection with institutions already in existence, would prove of vast advantage by stimulating the study of useful subjects throughout our public schools. Their desirability and how they may be established without entailing any heavy pecuniary burden will best be considered in a future issue.

INTERPROVINCIAL CONVENTION.

The announcement in our last issue of the proposed gathering of teachers, next July, in the city of St. John, marks the commencement of a new era in the history of educational procedure in these provinces. Hitherto the work in this department has been prosecuted independently in each province, without reference to and but little knowledge of the principles which govern and the practice which prevails in the others. And yet there have been times when questions of a character far reaching and vital to the interests of sound education, have commanded attention outside the province in which they were being discussed, and secured the interest and sympathy of the intelligent observer. Nor is the reason difficult to discover. Each province has naturally taken its own course in the development of its material resources, but the elaboration of a system of education is a very different matter. Though there are here also a diversity of interests, and prejudices local and traditionary, yet the inhabitants of the three provinces have sprung from the same stock, they acknowledge the same parent nationalities, and they inherit the same solicitude for the education of their children, and therefore, however indifferent they may feel towards other concerns of their neighbors, they give evidence by the care with which they watch educational progress, that this is a subject of common and not of mere provincial interest. It should not then be a difficult matter to bring the teachers and others connected with educational work in these provinces, together in convention, to discuss questions of paramount importance to the profession and the country, and to endeavor to arrive at a practical solution of some of those problems which are not only proposed to the educationists of Canada, but have long been engrossing the attention of the most distinguished men in their profession in the United States, Great Britain and the continent of Europe.

Provincial conventions and county gatherings of teachers have been upon the whole successful. Some persons have, however, expressed grave doubts as to the practical benefit of these meetings, but we have not the least hesitation in expressing our conviction, that if they do nothing more than bring the teachers together, promote fraternal intercourse, and become the occasion for the renewal of friendship and the interchange of experiences, they are of great advantage. The teacher retires from such meetings, encouraged and strengthened for his work. He feels that he is not alone, but one of a band of co-workers engaged in the same noble profession, inspired with the same enthusiasm and actuated by the same motives. And if such is the result from the more limited associations which assemble in county or province, what may we not look for from such a gathering as that at St. John?

When people meet for a common purpose, and when that is to help, animate and counsel one another, nothing contributes so much to success as the inspiring influence of numbers. Surely the teachers of New Brunswick, Nova Scotia, and Prince Edward Island have public spirit and professional pride in sufficient degree to ensure the presence of that element of success. They will have an admirable opportunity of discussing or hearing discussed subjects relating to educational administration and school procedure from the different standpoints of the three provinces. What more interesting topic can be discussed by the assembled teachers than the means by which a greater assimilation in methods and course of instruction can be reached? Teachers are at present educated, trained and certificated under the laws of each province—Why may not a common standard, a common license, and an interchange of teachers be one of the gratifying results of this convention? We know of scarcely any modification of the existing state of things which would serve more effectually to bring the provinces into hearty sympathy in the prosecution of educational enterprise, and infuse into the teachers a more healthy spirit of emulation and a brighter zeal.

We would say, then, to the teachers: Let the people see that you are alive to the importance of such a gathering as that contemplated, that you are possessed of the desire to stimulate each other by your presence, and express by force of numbers the influence which you must wield in the community, and convince the most sceptical by the wisdom and practical talent which you exhibit that you worthily occupy the positions of trust and honor in which you are placed.

That this Interprovincial Convention may be the means of creating a wider and deeper interest in true educational work in the community at large, may arouse the teachers to more sustained and more intelligent effort, be productive of wise legislation and more generous support, and elicit the enlightened sympathy and hearty co-operation of all sections of the people with the teachers, ought to be the desire of all who have the good of their country at heart.

AN "At Home" will be held at Dalhousie college on Thursday, April 26th. The interest attached to these gatherings in the past will be enhanced on this occasion by the fact the university will welcome its friends in more commodious and pleasant quarters.

ARBOR DAY.

Begin at once, if you have not already done so, to make arrangements for Arbor Day. Prepare—or, better, let the pupils do it—a plan of the school grounds; mark upon it where trees are to be set out, flower beds with the particular shape of each, what dead trees of previous plantings will have to be replaced. If a tree promises to be stunted or ill-formed or unthrifty, mark it for digging up in order to supply its place with a more vigorous one. No worse place could be selected for a group of ill-formed or stunted trees than a school ground. Clear away any refuse that may have collected during the fall and winter, and prepare it for burning. Clear away the mulching that has been used to protect the roots of the trees during winter. Ask some successful cultivator in the district about the quality and quantity of a fertilizer to be strewn about the tree—early so that the spring rains may carry nourishment into the ground and about the roots.

Begin early to get the children interested in the work. No better plan could be adopted than to have a lesson on natural history every day. A little change in the order of lessons in this respect will be productive of excellent results at a time of year when confinement in close rooms and the routine of regular work begin to be irksome. Use the outline of lessons on botany in this number of the REVIEW, adapting what may seem best suited for your class. Turn to back numbers of the REVIEW, and look over the "Ferndale School" lessons. Look out for those insects that appear early, and especially for indications of those that are harmful to trees and farmers. Incorporate these lessons on plants and insects for a time more with the regular school work by letting pupils draw and write about the subjects taken up for the day. Carry out these lessons with spirit and intelligence and Arbor Day will be a success: more, intelligent people in your neighborhood will realize that your work is useful.

Arrange early for a literary programme for Arbor Day, by making selections for recitations and songs, and assigning subjects for essays. The "Woods in Spring," "My Favorite Tree," "Famous Oak Trees of History," "Uses of Various Trees," the maple, oak, beech, pine, etc., "How to Care for Trees," and other subjects, may be selected. If there are any trees in the neighborhood or province about which any historic associations cluster, these may form the subjects of essays. In next issue further hints will be given for the observance of the day.

SUMMER SCHOOLS.

On another page of the REVIEW will be found the programme of the Nova Scotian Summer School of Science for this year. The staff of instructors is a competent one, and the work outlined of a practical and comprehensive character. Over forty teachers attended the school last year. Its promoters look forward with confidence to a decided increase this year both in numbers and interest.

The arrangements for holding a Summer School in New Brunswick are not yet completed, but they are sufficiently advanced to enable us to state that the School will meet in St. John, probably during the first week in July. A circular is being prepared, giving the limits of the course of study to be pursued, an estimate of expenses of members while attending, with the names of instructors in the different departments. This circular will be issued with the next number of the REVIEW.

The Summer School involves some sacrifice on the part not only of the instructors, but also of students; but we feel assured that those who make the sacrifice are greatly benefited. The laboratory work alternates with excursions to the seashore and other places of interest to the student, so that the time goes all too quickly, and the stimulus imparted quickens both the mental and physical pulse. We think no one will question that the teacher who spends at least a portion of his vacation in some inviting field of research, one that takes him into the open air, is much better equipped, both physically and mentally, for his year's work, than the one who aimlessly wanders about without any fixed purpose, or in the "rest" that is gained by entire absence from any occupation. If natural history is to be taught successfully in our schools, it can only be done through communion with and study of nature; and when can the foundation for this successful teaching be laid more leisurely than in summer, and where more pleasantly and profitably than at the Summer School?

ENGLISH LITERATURE.

If the attention which is devoted to this subject in the advanced classes of our high schools and colleges may be taken as evidence of the existence of a desire to become acquainted with the history of our literature, and of a laudable effort to gratify it, we are justified in acknowledging the presence of both. English literature is prominent in advertisements of the curricula of public and private schools. It is the pet subject to be presented on special occasions, such as public exhibitions or the advent of a distinguished visitor, when the marvellous familiarity exhibited by particular pupils with the characteristics and influence of our great writers calls forth the admiration and rapture of the listeners. At such times one cannot help observing that if the study is not successfully prosecuted, it is not owing to any want of effort on the part of the teacher, or of assiduous application on that of the scholar.

Nor are the means at the command of the teacher limited or inferior. The number of works, large and small, elaborate treatises and elementary text-books, intended to aid him in his labors, is simply prodigious. Not a year passes but books, booklets, primers, handbooks, charts and annotated editions are published to facilitate the labors of both teacher and student. And many of these are of distinguished excellence. They are not the productions of book-makers, but of the most eminent literary men of the day. The names of Arnold, Stephen, Chambers, Morley, Masson and Taine, are sufficient warrant for the character of their works.

But the question is forced upon us, and in such a manner that it cannot be evaded:—Is English literature, as it is generally taught, productive of permanent benefit? Is the knowledge contained in text-books, in the way in which it is most frequently acquired, of positive value to the student, or, from an educational point of view, is it an instrument of culture? Does the ability to name the principal English writers in prose or verse, to narrate the incidents of their lives, or repeat, after the class-book or lecture, a criticism of the work and the reasons for their place in the history of English literature, cultivate the intellect or elevate the taste? Does a course of instruction in this subject, as it is most frequently presented at the present time, appeal to or exercise any faculty of the mind but the memory? We fear that these questions admit only of an answer in the negative. Such instruction, as final, in this department of knowledge, is in most cases evanescent, and even where part of it is retained in the memory, the acquisition is of little value. We fail to observe, under this mode of procedure, any brightening of the critical faculty, any assimilation of knowledge or even an awakening of the curiosity.

We remember reading, some years ago, of the visit made to a normal school by a distinguished nobleman, high in office, and eminent as a man of letters. The class of young ladies that was called up for recitation, to present to his lordship a specimen of the work of the institution, and, perhaps, out of compliment to his literary fame, was examined in English literature. The questions were such as would be set in an examination paper, where time is at command and the nerves in repose. But the lady-students, in response to the questioner, poured forth in elegant language, criticisms of poems, biographies of poets, and essays on the development of the English language. They were rewarded by the applause of the listeners, and in a more marked degree by his lordship, who deplored the wretched condition of literary knowledge in his own country, as compared with that indicated by the exhibition which he had just witnessed. And yet it was nothing but a well ordered and carefully prepared performance. The students had been taught to commit to memory, and the answers were word for word in the language of the manual. No appeal was made to the judgment, taste, power of analysis, or even to their ability to express themselves in their own language. The exercise was barren but showy, to the unsuspecting a marvel, but to the initiated a sham.

This may be an extreme instance, but we fear that the study of English literature, as generally pursued, is not more profitable. It may, indeed, be necessary, and, perhaps, it is all that can be accomplished by boys and girls in the senior classes in our high schools, to confine the course in English literature to the names and works of our leading authors. But this might, without difficulty, be supplemented by biographical notices communicated in an attractive form by the teacher. And since every senior reader supplies selections from the works of our best authors, there need be no lack of excellent materials for illustration. Those especially who use the sixth reader of Gage's Educational Course, have an admirable series of extracts from the leading writers on both sides of the Atlantic, which, if judiciously managed, cannot fail in the hands of a cultured teacher to attract the sympathy and arouse the interest of his more promising pupils.

One of the best hand-books that we know of for beginners in the study of English literature is the primer by Mr. Stopford Brooks. It gives a clear, concise and intelligent idea of the principal works in the language, their authors, their place in our literature, the influence they had upon the time in which they lived, and upon the writers who succeeded them. But even this book, valuable compend as it is, will do little towards the culture of pupils, unless it be accompanied by selections from the authors whose works are revised. Nor can the teacher so effectually communicate a precise and impressive notion of the growth of our language, as by reading extracts from the authors selected to illustrate that development. At this stage, criticism is beyond the powers of the pupil, and all that the teacher can expect is a bare repetition of the opinions which the pupil has read or listened to. But he ought to call for a digest or abstract of the work or part of the work which has been read to him, and surely there is no better exercise in composition than this can be made.

But this presupposes that the teachers themselves are cultured men and women, that they not only know the facts of our literature, but understand and sympathize with its masterpieces. How otherwise can they induce their pupils to read and think, unless they read and think for themselves? If they have felt no love or appreciation of literature, how can they awaken these feelings in the minds of others? If they have not drunk deeply from the wells of our literature, how can they imagine that they will be able to lead others to these fountains and persuade them to drink? We would say, therefore, let our teachers be constant and thoughtful readers of our best literature, and they will not only extend and correct their views of men and of the world, gain deeper and truer conceptions of their own nature, but wield a beneficent influence on the minds of those who have been entrusted to their care and guidance.

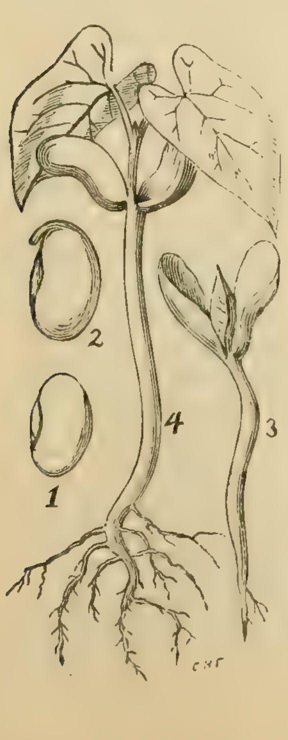
And what more satisfactory result can be gained from the study of literature than that the pupil leave school or college with an avidity for reading? If the teacher has aroused this desire and directed it to worthy objects; if he has, moreover, trained the mind to observe, reflect and discriminate, he has performed a signal service, a service infinitely more valuable than if he had drilled and ground and crammed into his pupil's head the whole circle of the sciences. The pleasure and profit to be derived from the habit thus acquired is unbounded, and the career of self-instruction is begun under circumstances of singular advantage. A small proportion of our youth proceeds to the university, so that most of the preparatory training for the business of life is obtained within the limits of the resources of the school systems of these provinces. How necessary therefore, that our high schools should not only be so equipped as to prepare our youth for the duties before them, but to bring them somewhat nearer to the perfection of their nature! It is right to fit out our youth with the mental implements which they will require in their several careers, but it is not less indispensable for us, on their account as well as our own, to avail ourselves of every instrument by which our common nature may be strengthened, exalted, purified and beautified. And of all the agencies at our command, we cannot conceive one more impressive or inspiring to young and ardent souls than the reading and instruction of a cultured and enthusiastic teacher from the pages of Shakespeare or Milton, Scott or Tennyson.

PRACTICAL BOTANY.

No. I. Growth from the Seed.

When a flower is planted and reared, dissected and classified, and sketched in its natural tints, it is known, as it never is known to a mere memorizer of botanical text-books. —*Popular Science Monthly for March*, p. 699.

Ask your pupils to plant half a dozen seeds of the common bean. This may be done in a common flower-pot—filling it with dry earth, finely powdered, or sand. Make two circles in the earth to the depth of about half an inch. Plant half a dozen beans in the outer semi-circle and two or three days after complete the circle. Plant in the inner circle likewise, allowing two or three days between each planting. Be careful to keep the earth moist with tepid water, sprinkling it twice a day, and keep a piece of glass over the flower-pot to retain the moisture. The temperature should be that of an ordinary living room —between 65° and 70°. If the boxes are kept during the day in a sunny window, growth will be more rapid. *In no case* should the teacher do more than give full and explicit directions to the pupil. Let the work and attention to the growing plants devolve entirely upon him, being careful to impress on his mind the necessity of an even temperature and sufficient, but not too abundant, moisture. About a week after the plantation has been commenced, two or three seeds of the bean may be started between the folds of thick paper or cloth, kept warm and damp, but allowing a circulation of air. (This will serve as an illustration that plants may grow for a time, at least, without being set in the earth).



In about ten days, or perhaps less, everything should be in readiness for the lesson —"Growth from the Seed." Let each pupil have a series before him, consisting of, first, a bean that has been soaked in water for the past twenty-four hours; second, one that has been growing for two or three days between the folds of paper,—and so on with the others in the order of growth as shown in the diagram. Allow time for careful examination of specimens; question judiciously, and be careful to proceed slowly and take one thing at a time. The order may be as follows: After the covering is separated from the seed that has been soaked in water, it is noticed that there are two halves. Ask the pupil to observe these parts in the next two or three of the series before him and the changes that take place. Is there any change of form? of color? loss of substance? What has become of the material laid up in the two plump parts of the seed? In this way the pupil may be led to see what purpose these parts serve. Show that this stock of food—an abundant one in the case of the bean or pea—was laid up the previous season by the parent, to support the young plant in the early stages of its growth. Show how man appropriates this nourishment for himself. (Ask the pupils to collect for another lesson the seeds of apple, wheat, corn, oats, etc., to show this store of food laid up. Get them to cultivate these in the same manner as the bean, and notice that the store of food is differently arranged). These two parts are called seed-leaves—*cotyledons*; write the name on the board. It is necessary to learn it. Notice the dwindling in size of the cotyledons, and the greenish hue they assume in the plants of advanced growth. Notice the second pair of leaves in No. 4 in the cut. Perhaps some of the plants are sufficiently advanced to show a third pair of leaves. If so, notice the similarity existing between these two pairs, and how they differ from the first.

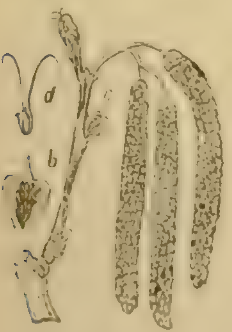
Turn again to the seed bean. What is the little cone-like body between the cotyledons? Notice in the seed that has been soaked for twenty-four hours that it has curved and lengthened. What do you notice between the cotyledons, so delicately folded up? Trace throughout the series. Show that this cone-like body pushes one end upward to the light and air (the ascending axis or stem) and that leaves are borne on it; that as these gradually expand—one on each side—the stem steadily pushes upward, continually sending out new leaves; that the part of the stem where they appear is called a node (Is there any connection between node and knot?); and that the part of the stem between the nodes is called an inter-node or "plant-part." Show that the plant hastens to expose as much surface to the light and air as possible. Why?

Return to the seed. One end of the cone-like body, it will be observed by comparing the plants of the series, is just as anxious to escape the light and air, and bends in an opposite direction. What do you notice appearing from this end? Was there any sign of these little roots in the seed? Convey the idea that the roots are *developed* from one end of the rudimentary axis, and that root-hairs grow from these roots. Get the pupils to look closely for these and show that their great number is to enable the plant to present all the surface possible below ground. Why? (Older pupils may be questioned more fully on what constitutes the food of plants and how they take it up.

Ask pupils to collect the little plants of maples, beeches and others, growing in hardwood groves, and which may be easily detected, peering out from beneath last year's fallen leaves, especially on a sunny hillside. Let them contrast these with the plants they have cultivated. Encourage them to search. Enter upon the work with enthusiasm. Let the pupils make drawings of the different plants studied, and of the same plant in different stages of growth. Let them write about what they have found out and they will express themselves clearly and well, if they have not been told what they ought to have seen for themselves, after careful questioning.

No. II. Early Flowers.

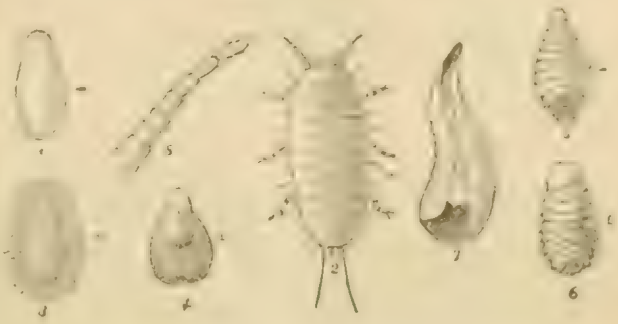
While the pupils are engaged in cultivating the plants referred to in No. I., they may be encouraged to look for those early flowers (catkins) that appear upon the willow, alder, birch, hazel and other trees and shrubs before the leaves appear. They may be found, especially on the willows, as early as the first week in April, and continue for several weeks; so that by the time the Review comes to hand, there will be abundance of material for plant lessons. The flowers are a little difficult for beginners but attention may be drawn to them, their characteristics as flowers observed, and sketches made of them. Older pupils may investigate further and find out the composition of the flower. The figure represents a branch of *Corylus rostrata* (hazel-nut). The drooping aments or catkins at *a* contain the staminate flowers; a bract showing the stamen with its short filament adhering is seen at *b*: the inconspicuous pistillate flowers are shown at *c*, with one at *d* enlarged. The staminate and pistillate flowers in the Corylus grow on the same plant — hence called monœcious (growing in one household). In others, as the willow, the staminate and pistillate flowers grow on separate trees; hence they are called diœcious (growing in two households).



On the common alder the staminate and pistillate flowers (calkins) are arranged in nearly the same way as in the above illustration. Collect also the flowers of the oak, birch, beech, hornbeam, sweet fern, *(myrica asplenifolia)*, and poplar. Distinguish staminate from pistillate flowers. Are the plants monœcious or diœcious?

FERNDALE SCHOOL.

No. XI.—The Oyster-Shell Bark Louse.
(Mytilaspis pomorum, Bouché.)



Teacher. I have here a piece of the smooth bark of a young apple tree, very thickly covered over with small oyster-shell shaped scales about the eighth part of an inch in length. I cut off a piece of the most densely covered, exactly one inch square. Please count the number of scales on it.

S. About 200.

T. Very good. I now scrape off one of them carefully with my pen-knife, turn it upside down and examine it with the microscope. It looks like Figure 7 above. Examine, and tell what you see.

S. It looks something like a curved canoe, broader at one end, and nearly all filled up with beautiful white potatoes shaped like Figure 1 above, only so small that there must be twenty or thirty of them in the broader part of the canoe.

T. Correct. These are the eggs of the insect which has shrivelled up to a very small speck at the narrow end of the scales. Some of these scales are more than a year old and empty. Supposing one half of them to be filled with eggs, how many eggs are there on this square inch of bark?

Scholars. One hundred multiplied by thirty—three thousand.

T. Yes; at the very least there are three thousand. And about the end of May and the first of June the warm sun will hatch these eggs, and from under these scales will come myriads of small lice like Figure 2 above, but so small that you can hardly see them with the unaided eye. Notice the two fine lines on the right side of the figure. The distance between these two lines is the real length. These small marks are put beside each figure to show its real size when not magnified.

S. That is why our gardener paints the trees about the first of June with soft soap, diluted with a strong solution of washing soda, I suppose.

T. That is quite the proper thing, for it will be sure to kill them at this tender and unprotected age.

But if they are allowed their own way they wander about in great numbers to the base of the smooth barked young twigs and insert their sharp tiny beaks into them and drink in the sap of the tree. One of the small antennæ of the insect is magnified very much at Figure 8.

S. But how do they build the scales over themselves?

T. In a few days a very fine waxy wool grows all around its body as in Figure 3. This wool is something of the nature of shellac which is secreted from the body of an insect in a similar way. It at last forms a shell over the insect which looks something like Figure 4, then 5, and finally like Figure 6. The shell sticks to the bark with the insect underneath. In August it commences to lay its eggs under the broad part of the shell, which grows in the direction of the narrow part, pushing the insect, as it were, before it, until sometimes as many as a hundred eggs have been found under the body of the scale, with the dried up remains of the insect itself, compressed into the extreme narrow end. The eggs remain protected under this covering through the winter until next spring.

S. Are they hurtful to the trees?

T. When numerous they are very injurious, and if not prevented, in June they can spread from one tree to another easily and are sometimes found on the pear, the plum and the currant bush. How would you destroy them?

S. With the soap and washing soda solution in June.

S. I would scrap them off in autumn or winter, so that their eggs would be destroyed by the wet and the frost.

T. Very good. But I should tell you that the male insect which is very small, has also a tiny pair of wings, and that they are nearly related to the visible plant lice, and therefore belong to the order *Hemiptera*.

THE Halifax *Critic* says: Mr. F. Blake Crofton's second paper on "Haliburton, Thinker and Writer," was admirably read on a recent evening before the N. S. Historical Society by Mr. S. Harrington, Sir Adams Archibald in the Chair. Those who were unable to attend missed a high intellectual treat. It would be impossible in any space we can command to do justice to it, but we earnestly hope that both lectures may be put before the public in some form accessible to all, for it is certain that no reading Nova Scotian ought to be ignorant of what has been so admirably done by Mr. Crofton for the reputation of Nova Scotia's greatest writer and almost prophetic thinker.

AMONG THE CONSTELLATIONS.

No. VII. — SOUTH-WESTERN CONSTELLATIONS OF APRIL EVENINGS.

"There they stand
Shining in order, like a living hymn
Written in light."

—*N. P. Willis.*

Late in the evening Taurus will be setting north of the west point of the horizon. Notice, that the whole heavens seem to describe a circular path around the North Pole Star as a centre. The Milky Way runs diagonally through this field—from between Perseus and Auriga right through the faint-starred Monoceros. Auriga, the charioteer, is not far from the zenith. Alpha of the first magnitude is called Capella. Alpha of Taurus was called by the Arabians Aldebaran (accent on second syllable). The Pleiades are well to the west, while Beta of Taurus, called Nath, in the tip of one of the Bull's horns, is near the Milky Way. Alpha of Orion is known as Betelguese, Beta as Rigel and Gamma as Bellatrix. The rhymster's directions can now be followed:

"From Rigel rise, and lead a line through Bellatrix's light,
Pass Nath upon the Bull's north horn, and gain Capella's height—
Where a large triangle is formed, isosceles it seems,
When Beta is with Delta joined to lustrous Alpha's beams."

Alpha of Canis Major is the brightest star in the heavens, also called the Dog Star as mentioned in our previous number. Alpha of Canis Minor is called Procyon, which means in Greek, the "forerunner of the dog," alluding to its appearing on the horizon shortly before the appearance of Sirius. A line through Gamma and Alpha of Orion eastward will pass above Procyon and its lonely companion Beta of the third magnitude. Right above these twin stars are Castor and Pollux in Gemini. Castor is the northern one, Alpha; Pollux is Beta.

Taurus, Gemini and Cancer are three signs of the Zodiac. The sun's path each year lies through them. About May 19th the sun will be below the Pleiades; about June 1st, above Alpha Tauri (Aldebaran); about June 10th, below Beta (Nath); about July 10th, below Castor and Pollux in Gemini, and towards the end of the month in Cancer. Next month we shall look in the same manner at the constellations in the south-eastern sky in the early part of the evening.

[NOTE.—We regret that a star-map, intended to accompany this article, could not be prepared in time].

THE PLANETS IN APRIL.

Mars and Uranus are in the constellation Virgo which will be directly south near 11 p. m. The former is bright and ruddy approaching Spica, the star of the first magnitude in the constellation. Uranus is scarcely visible except through a telescope. The ecliptic passes only a few degrees above Spica, which the sun will pass about the middle of October.

Jupiter is in Scorpio further to the east and will not south until about 2 a. m.

Saturn is in Cancer east of Pollux and Procyon.

Neptune is in Taurus.

Venus and Mercury are in Aquarius southing between 10 and 11 a. m., and are visible just before sunrise.

THE COMET.

Sawerthal's comet is also in Aquarius, not far from the neighborhood of these planets. It has come from the south where it was first visible and is passing from Aquarius northerly into Pegasus. It is now becoming invisible to the naked eye.

SUN DOG.

On Friday, March 16th, at 4 p. m., Pictou, a very brilliant sun dog, as brightly colored as a rainbow, appeared in the deep blue colored sky above it. Measured by a sextant it was about 46° above the sun to which it was convex. It was at least 30° of arc in length forming apparently a portion of circle around a point near the zenith. Before the measurements were completed a light cirrus cloud grew out of the blue and the bow become faint and rapidly disappeared.

FERNDALE NOTES.

III.—MINERALS CONTAINING IRON.

1. *Pyrite,* FeS_2 (Iron bisulphide, Fool's Gold). Yellow. Harder than a knife-blade. When heated gives off sulphur. Sulphate of iron (green vitriol or copperas) and sulphuric acid (oil of vitriol) manufactured from it, but not in Atlantic Provinces. Very abundant.

2. *Marcasite.* A variety of pyrite, but nearly white. A fine specimen seen from Cumberland Co., N. S. Rare.

3. *Arsenopyrite,* $FeAsS$ (Mispickel, Arsenical Iron Pyrites). White. Softer than pyrite. When heated red hot gives off white arsenical fumes with an odor of garlic. Abundant in the gold-bearing rocks of Nova Scotia. A profitable source of arsenic if utilized.

4. *Chalcopyrite,* $CuFeS_2$ (Copper Pyrites, Copper and Iron Sulphide). Yellower than pyrite and softer. Differs from gold in crumbling before the edge of the knife, which easily marks it. A copper ore. Widely disseminated in Nova Scotia, Cape Breton, and New Brunswick.

5. *Menaccanite.* (Titaniferous iron ore). Like Hematite, but a portion of the iron is replaced by *titanium.* Found abundantly as an iron sand at St. Mary's Bay, west of Digby, N. S., also in Shelburne, Halifax and Pictou Counties, N. S. Magnetic iron sand is the variety called *iserine;* non-magnetic, *ilmenite.*

INTERPROVINCIAL CONVENTION COMMITTEES.

The following are the names of those appointed on committees in connection with the work of the Interprovincial Association. A detailed programme of this work will be published in the May or June number of the REVIEW. In the meantime, teachers in the different provinces will confer a favor by communicating any suggestions they may have in regard to the work of each section, to any member of the committee belonging to such section.

GENERAL COMMITTEE.

Supt. Montgomery, P. E. I.; F. H. Eaton, N. S.; Eldon Mullin, N. B.

COMMITTEES FOR SECTIONS.

NEW BRUNSWICK.

(A). *Normal School.*—Principal Eldon Mullin, Fredericton.
(B). *Inspectoral.*—Inspectors Oakes, Canterbury, York Co.; Wetmore, Clifton, Kings; Mersereau, Newcastle, N. B.
(C). *High School.*—Philip Cox, Newcastle; Wm. M. McLean, St. John; S. C. Wilbur, Moncton.
(D). *Common School.*—H. Town, St. John; W. T. Kerr, Woodstock; S. W. Irons, Moncton.
(E). *Primary School.*—Annie M. Harvey, Fredericton; Grace Murphy, Portland; Jennie Lyle, St. Stephen.

NOVA SCOTIA.

(A). Principal J. B. Calkin, Truro.
(B). Inspectors H. Condon, Halifax; C. E. Roscoe, Wolfville; A. G. McDonald, Antigonish.
(C). A. H. MacKay, Pictou; A. Cameron, Yarmouth; H. H. McIntosh, Lunenburg.
(D). Messrs. W. T. Kennedy, Halifax; A. D. Brown, Bridgetown; W. R. Slade, Oxford.
(E). Miss A. Lewis, Truro; Miss Sullivan, Halifax; Miss McGregor, Amherst.

PRINCE EDWARD ISLAND.

(A). Principal Anderson, Charlottetown.
(B). Inspectors Arbuckle, Summerside; Cain, New Perth; McSwain, Charlottetown.
(C). Neil McLeod, Summerside; John A. Matheson, Kensington; John P. Wickham, Charlottetown.
(D). Allan C. Stewart, Stanley; Geo. E. Robinson, Charlottetown; John C. McEachern, Nine Mile Creek.
(E). Maria Lawson, Charlottetown; Jeanetta McPhail, Summerside; Helen Mitchell, Charlottetown.

COMMITTEE ON LOCAL ARRANGEMENTS

John March, F. H. Hayes, W. S. Carter, G. U. Hay, St. John.

For the REVIEW.]

SCHOOL SAVINGS BANKS.

I notice in a recent number of the EDUCATIONAL REVIEW a valuable extract from the Newcastle, N.B., *Advocate*, on School Savings Banks. As their establishment is something of an experiment in this country, it may interest your readers to know how the Dartmouth Bank is succeeding, as well as to know whether the criticism which was referred to in the extract is correct or not.

The Bank here has been in operation eleven weeks—a short time, but sufficient to form an opinion on many points. First, let me remark that the scheme was not advertised or lauded by any one connected with it so that it would have a big "send-off" in starting. The whole matter was conducted quietly, and in many rooms the scheme was simply spoken of *once* previous to opening the Bank, just sufficient to explain its objects and its working. I give you a list of each week's deposits; no exception is made for stormy days or any other such matter, hence some weeks are small, owing to bad weather and to the necessity of having attended four days in the week in order to bank.

The first banking day was December 9th, when $50.22 was deposited. The rest are $43.33; $43.68; $74.47, first banking after holidays; $42.82; $36.09; $50.88; $52.93; $32.04; $51.25; $47.33. As you are aware the months of January and February are the hardest months in the year to get cash.

We now have 601 depositors out of about 875 pupils enrolled. Average amount to credit of each depositor 87 cents; highest amount deposited by any pupil $14. A very large number deposit very small sums—from one to ten cents. This I consider a strong argument in their favor. The amount of withdrawals to date is only $2.19. As far as inquiry goes, I am able to state that many boys and girls are made more industrious through its working, as deposits of a pupil's *own savings* are encouraged, not deposits given by parents. Many, of course, are too young to earn, and do deposit sums given them; but many of the older ones deposit their own earnings instead of spending them foolishly.

As to the chief argument advanced by the teachers of Northumberland County against the scheme, *i. e.*, that it would place the children of poor parentage in a bad position as compared with those of rich parentage, I can say after careful enquiry and examination of the books, that such is not the case. In fact the largest deposits in many cases are made by those from whom we would least expect it. Active boys, who are willing to earn a few cents on opportunity, have the largest accounts as a class. The criticism that it will put class against class, or in any way wound the feelings of the child whose parents are not as well supplied with this world's goods as another, does not hold at all. Some from whom we would expect large deposits, come up with two to ten cents, while a poorer neighbor will have twenty-five cents. Our deposits are slowly growing, when we take into consideration the fact that the attendance has been bad owing to severe weather.

Our experience has led us to believe that School-Savings Banks must be productive of good in Canada. The sound, practical training they impart in saving and self-restraint as well as the industrious habits fostered, not to consider the sum of money saved, must have a good effect on the youth of our towns where the chief object seems to be to get money to *spend*. When our experiment is tried out a few more months we shall expect all towns of any size and energy to adopt the system, and there can be no doubt as to the good they are capable of doing. In the old world that has been proved. School Savings Banks have come to stay. The battle is with the strong, and he is strong who can point to a cash surplus; still stronger is he who has the power within himself to create that surplus. School Savings Banks are an important factor in giving that power.

F. S. CONGDON.

Dartmouth, N. S.

For the REVIEW.]

HINTS TO PRIMARY TEACHERS.

A primary teacher should make the children she has to teach a study. To study children is of never-ending interest, as each child presents some new phase in its disposition; and no teacher will succeed unless she knows enough of that child's disposition to lay any subject before it so as to make it pleasing. One of the things to make a primary school successful is variety. Not constantly changing, so as not to give a child time to grasp one idea before it is hurried to another, but connecting one study with the other, or carrying the same idea through both. Children often get a dislike for study by being put through a regular routine distasteful to them. What child does not like change?

Cultivate the senses. What are a child's eyes for but to use? and how many children are not taught to use them? Have you never heard grown persons mourn because they did not notice objects at a glance?

Some persons will go through some particular place once and be able to tell you more about that place than one who has been through the place several times. What is the difference? One has cultivated the sense of sight and the other has not. Teach a child to notice the objects it passes in going to and from school, and afterwards tell what it has seen.

A short time ago I gave some lessons on quartz, and in a few days I had a number of good specimens from the neighboring fields brought in by some of the smallest pupils of the school.

Did you ever see a child who did not like to handle things? It is quite natural that it should. Every child likes to see and feel any object it is being taught about. In giving an object lesson, do not take some vague subject, but take some object that will interest as well as instruct a child. Let it have the object in its hands, and examine it while the teacher explains and shows it the different points to be noticed.

Do not keep a child restrained. Let it be free to talk and act naturally. Do not mistake. Have good order; but you can have good order and not force it from children by harsh methods, but by a gentle firmness needful in governing children, which will not restrain them. No child can become interested in any subject when its mind partly is taken up by being kept in some unnatural position.

Teach drawing. It cultivates accuracy in sight and proportion and firmness of hand. It can be taught before writing, and in so doing the pupils will be better prepared to form the letters and have more control of the hand. Perhaps you will say, "Where will time come from for reading and arithmetic?" There will be plenty of time for them. Let that old-fashioned idea go, of teaching nothing to children but reading and arithmetic. Be a growing teacher and keep up with the age. A child will have use for other things besides reading and arithmetic in future years. We teachers are preparing them to battle with life. How careful we should be not to make study distasteful to children.

A primary teacher should be one of the best educated and most experienced of all teachers in order to answer the many questions of a child just beginning to think. And we should be so cautious not to answer in any way to give a wrong impression, for it seems almost impossible to get a wrong idea out of a child's mind. We are teachers under God, laying the foundations of the men and women who are to rule and influence the nation in after years. W. B. P.

Hebron, N. S.

IT is the opinion of some recent psychologists, that memory is an attribute of the mind, like attention, not a faculty. If this is so, memory cannot be cultivated directly, only indirectly, through the faculties.

For the Review.

ARBOR DAY.

Of late years a rapidly growing interest in tree culture has been manifested. The importance of the subject has long been recognized in the old countries of Europe, in several of which the state has taken it up, and by systematic planting has sought to supply the waste of the forest, caused by the continuous demand for timber. In the United States agriculture is pursued, not only with the object of replacing destroyed forests, but with the further purpose of affecting the climatic conditions of some sections of the country.

In Ontario and Quebec the same question has been pressing itself upon the public. Now, in those provinces immense numbers of trees are yearly planted and an Arbor Day observed. The agency of the schools has been called in to assist in this work, with the two-fold object of planting and so beautifying the roadsides and school grounds, and of imparting a useful branch of knowledge to the children, who, being early trained in arboriculture, are pretty sure in future years to continue the work and so add to the wealth of the land. This training further teaches them to prevent the needless destruction of woods, which in the past has caused enormous injury to the provinces. In our Northwest, strenuous efforts to the same end are being made. In these Maritime Provinces there is ample room for similar work. Some of our towns are bare, bleak and dusty, owing to absence of foliage from the streets, while others, of which Fredericton is a good illustration, are rendered beautiful and pleasant by their magnificent trees.

In Charlottetown, for many years no effort was made at improvement in this direction. The town is well situated and planned, but its broad streets were dirty and dusty, scarcely a leaf to be seen. Its principal square was an eyesore of old paper, brick-bats, decayed grass and refuse of divers kinds. In 1884, an organized effort was made to improve upon this state of things, and the Queen's birthday that year made Arbor Day and proclaimed a public holiday. The children from the public schools, to the number of 1,200 to 1,500, marched in procession to the square where addresses were delivered, and then the work of planting began. Several hundred trees were put out on the squares and streets by citizens, and last summer in their fourth season these trees had grown greatly, and had much improved the appearance of the place. Each year since then further planting has been done, though not nearly so much as was needed, until some 800 to 1,000 trees have been planted out in different parts of the city. During the same period, Queen Square has been transformed from its ugliness into beautiful ornamental gardens.

In the country parts of P. E. Island little has yet been done, though three years ago the teachers and children in some of the public schools, at the instance of the Superintendent of Education, began to plant trees about the play-grounds. This is a most desirable movement. The writer well remembers, when a child attending a country school, the bare school-house of one room, cheerless inside and bare without. There were no trees near, save a few stunted spruce, and this on a spot where the elm or maple had only to be planted to grow luxuriantly in the rich virgin soil. The movement now begun should be carried on. Every teacher should consider it a part of his duty to promote it. The children will take a delighted interest in their trees if he shows them how to plant. It is yet too soon to see the good results of the work already done, sufficient time not having yet elapsed for much growth to be made, but very few years will show a good return, and the time spent by children and teachers in procuring and setting out the trees was not the least pleasant of their holidays.

Would it not be well to institute an Arbor Day for the schools throughout all the Maritime Provinces? Parents equally with their children might be expected to take an interest in it. The provinces would be gainers by every tree planted; the children would insensibly acquire information which would afford them future profit as well as pleasure. It might be impracticable to have the same day in all three of these provinces, as the date would necessarily be determined largely in each year by the time at which the spring opened, yet the same day would merely be adapted to the conditions of the whole of any one province. Each year the results could be made known by correspondence between teaching bodies or through the columns of educational or other journals, and might well find place in the reports of the several departments of education. A. B. W.

Charlottetown, P. E. I.

APRIL.

April is here!
There's a song in the maple, thrilling and new;
There's a flash of wings of the heavens' own hue;
There's a veil of green on the nearer hills;
There's a burst of rapture in woodland rills;
There are stars in the meadow dropped here and there;
There's a breath of arbutus in the air;
There's a dash of rain, as it flung in jest;
There's an arch of color spanning the west;
April is here!

—*Emma C. Dowd, in St. Nicholas for April.*

For the Review.]

FOUR NOTABLE REPORTS.

Four Kindergarten reports lie before us. That from Philadelphia, issued last year, contains an account of the transfer, by the Sub-primary Society, of thirty-two free Kindergartens to the school-board of that city. Miss Anna C. Hallowell, who, in 1879, stimulated by the generous example of Mrs. Pauline A. Shaw of Boston, founded free Kintergarten No. I., has ever since devoted herself to the work, and goes with her Kindergarten, in their new departure, as a member of the city school-board.

Boston Report of Examinations.

This contains answers from nearly 200 primary teachers to questions, propounded by the authorities as to the value of kindergarten training preparatory to the school. Putting together favorable and unfavorable opinions, (some of the latter from *hearsay only)*, the verdict stands seven to one in favor of the kindergarten, as an *underpinning* to the school. The points of agreement were as follows: The children were more amenable to discipline and better able to settle down without delay to the orderly work of the school; the training of the senses had made them more observing and accurate; they had a fund of general information; they had an unusual command of language, therefore they learned to read quickly; their knowledge of form and constant dealing with numbers gave them an advantage in drawing, writing, and arithmetic; their manipulation of material in the "gifts" and "occupations," made them neat-handed; they were truthful, kindly, desirous of pleasing, and interested in their work.

The City of Boston has accepted the offer of Mrs. Shaw's free Kindergarten, so long supported by her munificence. She has not thrown upon them the burden of a costly and doubtful experiment, but has handed over an organized success, and a splendid addition to the public school system. The grant of $20,000 for their maintenance during the current year, is a tangible expression of gratitude to the noble daughter of Agassiz for her princely gift.

Report of the "Golden Gate" Kindergarten Association, San Francisco.

This association was organized Oct. 6th, 1879, when the second free Kindergarten in California was opened in Jackson street, a wretched place, on what is known as the Barbary Coast.

Mrs. Sarah B. Cooper, the superintendent, with Mrs. Leland Stanford, the honorary president, are the principal actors in the wonderful kindergarten movement which is transforming some of the worst parts of San Francisco. Ten years ago there was not one free kindergarten west of the Rocky Mountains.

There are now over thirty in San Francisco alone, and they are spreading in every direction from the extreme north of Washington Territory southward to New Mexico. Mrs. Stanford, in memory of her beloved and only child, Leland, has, herself, given over $30,000 towards these kindergartens, but better than all, she gives them her own loving heart, full of tender sympathy for helpless, neglected childhood. Her visits are red-letter days in the children's calendar; seven hundred were enrolled in those supported by her in 1887.

Four private individuals each sustain a free kindergarten, as also does the Produce Exchange of San Francisco. The school-board has had two experimental classes, and has appointed Miss Anna Slovall, their former principal, Kindergarten Inspector of Primary Schools, where Frœbel's system is doing good work among children of the eighth grades. The school-board has also appointed her as instructor of the primary teachers of all grades, so that virtually, the kindergarten forms part of the school system. In October last, the Union and Bohemian clubs played a match for "sweet charity," the net receipts of which were $1,185.50, three-fifths of which, $711.30, was given to twenty-seven free kindergartens; with an annual enrolment of 2,749 children, this would allow about twenty-six cents to each child. Time would fail to give an account of all the agencies to raise money and provide food, clothing, toys and entertainment for the little ones of the kindergarten.

First Annual Report of the Kindergarten for the Blind.

This beautiful building situated in Roxbury, was dedicated April 19th, 1887, and received its first pupils, ten in number, May 2. The building, which cost nearly $18,000, had a debt of $11,000 cleared at the dedication. Mr. Anagnos, a Greek, who is the director, made a strong plea for an endowment of $100,000. Part of this sum is raised; the balance will be forthcoming soon, without doubt, when the enterprise will be an assurred success. At a meeting held in Tremont Temple, June 7th, 1887, for the Commencement exercises of the Perkins' Institution and Massachusetts School for the Blind, one pretty sight was that of ten little blind ones from the Kindergarten, modelling in clay the "History of Grandmother's Johnny-cake." Each child made a model of some one or more implements necessary to its production, and held them up, explaining their use. Plough, harrow, hoe, mill-stones, sacks of grain, wagon, pan, scoop, spoon, molasses-jug, miner's cap and lamp, coal-hod and stove were all there; the smallest ones made the cake itself. Then they sang a song, written by a former pupil of the school, about all the workers who were required to prepare the materials for the Johnny-cake. This scheme has taken five years to work up, the last words of Mrs. Anagnos to her sorrowing husband were: "Don't forget the dear little blind children." Here indeed they will be well remembered and well cared for and prepared to face life with chances of success vastly increased. All the world around us is awakening to the need of kindergarten training. How long shall we remain indifferent to its benefits? How long before our wealthy men and women will see the value of the kindergarten, not only for the children of the well-to-do, but also as the surest means of diminishing crime and pauperism by training the little ones, still unspoiled, to intelligence and virtue? C.

Halifax, N. S.,

S.P.C.A. Column Educational Review.

A HUMANE MOVEMENT.

The death of Mr. Henry Bergh, who has devoted many years of his life to the promotion of the humane treatment of animals, calls renewed attention to the objects and general scope of the Society for the Prevention of Cruelty to Animals.

Like the other numerous benevolent societies now existing, this has attained the nature of a movement and is making its way round the world. The first S.P.C.A. was organized in England, in 1824, and it was not until 1866 that the first American Society was founded in New York. Societies now exist not only in Great Britain, but throughout Europe, America, Asia, Africa and Australia, amounting in all to about three hundred. The movement has been productive of good to mankind as well as to the lower animals, and has promoted a general spirit of kindness among the members of the societies. For instance, the New York Society for the Prevention of Cruelty to Children, was the immediate outcome of the S.P.C.A. of that city. It is related that a lady who found a child suffering from cruel treatment reported the case to the police, but they discouraged her by saying that they could not interfere between parents and children. A lawyer to whom she applied told her the same. But she did not give up. She applied to Mr. Bergh, president of the S.P.C.A., and told him she had "found a little animal that was suffering from unkind treatment from a woman." She very ingeniously kept the fact that it was a human animal from Mr. Bergh until he had promised to take the case in hand. When she told him that it was a little child, he replied, "Well, you have done this cleverly, and I will not go back from my promise." The case was carefully investigated, but brought such a multiplicity of similar cases before the notice of Mr. Bergh that he was obliged to inaugurate a Society for the Prevention of Cruelty to Children. This idea soon found its way to England, and while America has the honor of establishing the first S.P.C.C., England was not slow to follow, and similar societies were very soon formed in Liverpool and London.

To many, however, the most hopeful and important branch of the whole movement is the Bands of Mercy. The first Band of Mercy in America was formed in Massachusetts in 1882, and now has a membership of three hundred thousand. In both the United States and France, the Bands have been introduced into the schools and become part of the educational system of these countries.

St. John has the honor of being the first city in Canada in which the Bands of Mercy have been formed; and in one year after the inauguration of the movement here, the membership numbered twelve hundred. This branch of the movement is under the especial jurisdiction of the Ladies' Committee, as is the case in other places.

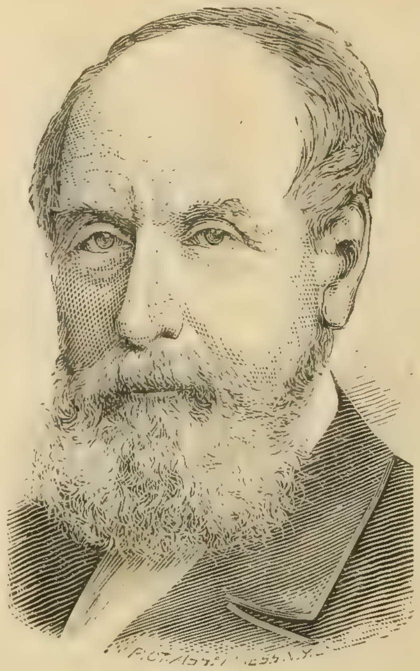
The great interest in this department arises from the conviction that the future is in the hands of the children, and the most enduring work is to be done among them. Through the literature and general work of the Bands much more is taught the children than the mere humane treatment of animals. The essays, annual gatherings, etc., stimulate the members to observe the habits of animals and acquaint themselves with the general facts of the animal kingdom. Their minds are also awakened to the sufferings of human beings and imbued with a desire to treat each other kindly. F.

St. John, N. B.

In a recent address of Sir Lyon Playfair, President of the British Association, relating to questions of scientific and industrial training, and their effects on national life and national prosperity and progress, occurs the following passage which is full of most important truth. He says:

> "In the school a boy should be aided to discover the class of knowledge that is best suited for his mental capacities, so that in the upper forms of the school and in the university, knowledge may be specialized, in order to cultivate the powers of the man to their fullest extent. Shakespeare's educational formula may not be altogether true, but it contains a broad basis of truth:
>
> "'No profit goes where is no pleasure ta'en;
> In brief, sir, study what you most affect.'"

In this quotation the truth we have often urged in these pages is clearly expressed, viz.: that there should be adaptation of training to each pupil's needs and peculiarities in our schools.



SIR JOHN WILLIAM DAWSON.

[Principal and Vice-Chancellor of McGill University.]

The subject of this brief sketch, although nearly sixty-eight years of age, is at present apparently in full prime vigor of life, to judge by the enormous amount of scientific and educational work which he continues to accomplish. He stands at the head, not only of Canadian, but of American scientists, and his accomplishments have won for him in the old world a place in the front ranks of the great men whose names will go down honored to the future ages. He was born at Pictou, Nova Scotia, 13th October, 1820, was educated in the Pictou Academy, and commenced his work in natural history when only twelve years old by making a collection of the fossils of the carboniferous rocks of the county. From the academy he went to the university of Edinburgh, where he paid special attention to natural history subjects and practical chemistry. In 1842, he studied the geology of Nova Scotia, in company with Sir Charles Lyell. In 1846, he completed his university course at Edinburgh. Returning home he continued his investigations, constantly publishing his observations and discoveries in scientific periodicals and in the transactions of learned societies. He was invited by the authorities of Dalhousie College to give a course of scientific lectures in Halifax which won for him the reputation of a popular lecturer. In 1850, he was appointed the first superintendent of education in Nova Scotia. He took a prominent part in the establishment of the Normal School in Nova Scotia, and as a commissioner appointed by Sir Edmund Head in the regulation of the University of New Brunswick. With extraordinary energy and a vision far ahead of his contemporaries he commenced the organization of provincial education. He published a work on agriculture for the schools which went through two editions, and a hand-book of the geography and natural history of Nova Scotia; but not until the REVIEW took the matter in hand has there since been so much attention paid to the development of the industrial natural history of the country. The government being too timid or too conservative to carry out his projected reforms, he resigned his office and accepted the position of principal of McGill University and professor of natural history. The shadow went back then on the dial of scientific educational progress in Nova Scotia several degrees. But three decades of general progress have prepared a new generation for the more complete realization of our first superintendent's dream.

He is the author of a very great number of scientific papers. Some of his better known books were published as follows: 1855, "Acadian Geology." 1859, "Archaia, or Studies of Creation in Genesis." 1863, "Air-Breathers of the Coal Period." 1864, "Hand-book of Scientific Agriculture." 1868, "Acadian Geology," enlarged edition. 1870, "Handbook of Canadian Zoology," the latest edition of which is a text-book in the Nova Scotian Summer School of Science. 1873, "The Story of Earth and Man." 1874, "Science and the Bible." 1875, "The Dawn of Life." 1877, "Origin of the World." 1880, "Fossil Men." 1881, "The Chain of Life." 1887, "The Geological History of Plants" (International Science Series).

Some of his principal honors were won as follows: Fellow of the Geological Society, 1855; M.A., 1856; LL.D., 1857; Fellow of the Royal Society, 1862; First President of the Royal Society of Canada, 1881; C.M.G., 1882; President of the American Association for the Advancement of Science, 1882; Knighted, 1884; President of the British Association for the Advancement of Science, 1886.

Sir J. W. Dawson's genius has made the University of McGill known over the whole world; and makes the commercial metropolis of Canada, French Montreal, pose in imagination as an English university city. It is hoped he may be present this summer to address the interprovincial convention of teachers at St. John.

DEER are increasing in numbers to the west of the river St. John. There are no moose or caribou on that side of the river. Wolves are also being seen in increasing numbers in our woods. These follow on the track of the deer. A few days ago a huge wolf was seen in the woods a short distance back of Harvey station.—*Saint John Globe.*

EDUCATIONAL REPORTS.

We have received the report of Chief Supt. Montgomery on the schools of Prince Edward Island, for the year ending June 30th, 1887. The document is an interesting one, and satisfactory progress is shown in education compared with former years. There were 505 teachers employed for the year over as many school departments, with only five districts without schools. There were 22,460 pupils enrolled, giving an average to each teacher of 44. The pupils made an average daily attendance of 12,325, or an average to each school of 24. The percentage of enrolled pupils daily present was 54.88. In 1886, this percentage was 56.27—the highest of any province in the Dominion for that year. The following is the average salary paid to teachers:—

Male	Teachers,	1st	Class	$400 88
"	"	2nd	"	270 24
"	"	3rd	"	217 96
Female	"	1st	"	311 18
"	"	2nd	"	213 57
"	"	3rd	"	157 34

Though the average salaries of teachers is less than in New Brunswick and Nova Scotia; it is a noteworthy fact that there is less disproportion between the salaries of male and female teachers than in either of the other provinces. The salary of first class female teachers is greater than in Nova Scotia, and nearly equal to that in New Brunswick.

In regard to subjects of study, reference is made in the report to a marked increase of those having a practical bearing, but regret is expressed that "the programme of studies for the whole school is adapted to the needs of the few who are preparing to enter the professions. This is an abuse of our educational advantages. . . . . Only one in about 200 of our young people ever go beyond the common district school, and less than one in every 1,000 enter the universities. The education given in the common schools, therefore, should train the young principally for the duties of practical life."

The report of Geo. S. Milligan, LL. D., superintendent of the Methodist schools of Newfoundland, for 1887, has been received. 130 schools under the Methodist board were in operation during the whole or part of the year, giving employment to 114 teachers. The whole number of pupils attending the 130 schools was 6,903, with an average of 3,704.

There is other matter of interest in the report, but there are two additional reports that have to be consulted in order to get complete educational statistics for the Island. As these are not at hand for comparison, we have not the data for presenting any adequate view of education in Newfoundland.

[Inspector Hinkle Condon.]

As regards the poor teacher, the inspector admonishes, suggests, lays out the work, but reflecting on the improbability of finding the same teacher at his next visit, is disheartened as he thinks of the slender chance of progress a school may expect to secure from a changing succession of such hirelings. His own helplessness in the matter is painful.

If we could have the one term arrangement and no engagement for less than a year, the inspector might have the opportunity of making the government grant for the second payment contingent on fair honest work; but under the present order of things, when he returns on his semi-annual visit, he may find that even the register has not been correctly kept; nevertheless, the government money has been paid, and the unfaithful teacher has gone into some other section or district to play the same farce over again.

[Inspector James H. Munro.]

A gratifying feature deserving of mention, is the longer continuance of teachers in one section. At the beginning of the summer term, comparatively few changes were made, especially in Yarmouth district. This is a hopeful sign indicating that the trustees understand that frequent changes mean unprogressive schools and wasted funds. And may we not hope that teachers also are assisting to bring about this improvement?

The new course of studies is now fairly launched. The completeness of the course is its admirable feature. It ensures to the young people of our country a whole education in all that is necessary as a preparation for business, or as a foundation for collegiate training.

[Inspector L. S. Morse.]

It is gratifying to know that trustees and parents in many of our most desirable sections are growing in their appreciation of teachers who have received a normal training and who adopt normal methods of instruction. This fact is inducing larger numbers of our teachers to attend the normal school and to receive training at the hands of the competent staff of instructors in charge of that institution.

It is but just to add that those teachers who have succeeded in grading their schools as required, and in systematically following the course of work prescribed, are unanimous in their appreciation of its value as a guide to sound systematic instruction. On the other hand, the attention of those who have been less successful in grading their school has been plainly called to the fact that the affidavit which they are required to make at the end of each term, obliges them to swear that they have taught according to law, which may now fairly be interpreted to mean, among other things, according to the course of study.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to Educational Review, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to Educational Review, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to Educational Review, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

H.—The enclosed sponge comes from the Baie de Chaleur. I have not observed it on the southern coast of New Brunswick. Please determine it.

Your sponge is a species of *Isodictya*, not uncommon in the gulf.

Teacher.—From an article a few months ago in the Review it appeared to be suggested that carbonic acid was not the only injurious constituent of badly ventilated schoolrooms. What else is injurious?

An answer to this is given in a late number of *Science*, in which it is stated that Prof. Brown-Séquard has recently been making experiments to determine whether the human breath was capable of producing any poisonous effects. From the condensed watery vapor of the expired air he obtained a poisonous liquid, which, when injected under the skin of rabbits, produced almost immediate death. He ascertained that the poison was an alkaloid, and not a microbe. The rabbits thus injected died without convulsions, the heart and large blood-vessels being engorged with blood. Brown-Séquard considers it fully proved that the expired air, both of man and animals, contains a volatile poisonous principle which is much more deleterious than carbonic acid." But as carbonic acid is more easily detected and quantitatively determined, its amount is in practice taken as the measure of the degree of contamination of air from the products of respiration.

D. M. S.—What course would you recommend for a beginner in botany?

Get such a book as Gray's "How Plants Grow," with Spotter's Botany, Part II.; or Gray's "School and Field Book of Botany," and examine, analyze and determine every different flowering plant as soon as you find it in bloom. A lens will be necessary for the examination of very small flowers. Do the work of determining the name of the plant yourself. That will compel you to study vegetable morphology as a botanist; and the discovery of a rare plant will be a more pleasurable episode than the landing of a Margaree salmon.

E. H.—Please give in your next issue a programme of exercises for Arbor Day; also, a plan of keeping a record of trees planted.

We will publish a programme in our next—to be issued on or before May 10th. The subjoined place, modified to suit circumstances, may serve your purpose.

KIND.	DATE.	LOCATION.	DEDICATED TO
Elm...........	May 25	First Row, No. 1...	Lt. Governor.
Wild Rose	May 25	East Front Window	Chief Supt.
Virginia Creeper	May 25	West Front Window	Inspector.
Maple.........	May 25	Second Row, No. 6	Teacher.
Evergreen......	May 25	Third Row, No 2 .	Educ. Review.

Trees may be numbered from east to west or north to south; rows *vice versa*.

PERSONAL NOTES.

His Excellency the Governor in Council, has been pleased to appoint the Rev. A. C. Waghorne to be a member of the Church Board of Education for Fortune Bay, in place of Rev. George Field, left the district. The Rev. Mr. Waghorne is the botanist of Newfoundland. He is now preparing a book on the native fruits of the Island, which should be an extremely interesting work to Canadians with a botanical taste.

The marriage of Mr. W. F. Ganong to Miss Carman of Fredericton took place at Cambridge, Mass., on the 4th of April. The REVIEW extends its congratulations to the happy couple and wishes them a happy and prosperous wedded life.

One of the forthcoming volumes of the series of "Canterbury Poets," is being edited by Prof. C. G. D. Roberts, of Kings College, Nova Scotia. It is to be called "Poems of Wild Life," and will include a large number of selections from American and Canadian poetry.

BOOK REVIEWS.

Notes and Observations on the KWAKIOOL PEOPLE OF VANCOUVER ISLAND, by Dr. George M. Dawson, F. G. S., F. R. S. C., Assistant Director of the Geological Survey of Canada.

This is a reprint from the transactions of the Royal Society of Canada, Vol. V., Sect. II., 1887. Dr. Dawson is a son of Sir J. W. Dawson. He is yet a very young man, but has already added more to our knowledge of the natural history of Canada than most of our scientific men. His untiring energy has been shown in the information which he has collected on so many different subjects. In this paper he describes the territory and boundaries of the Kwakiool people, their tribal sub-divisions, mode of life, arts, customs, traditions, folk lore, religion and actual condition, with a classified vocabulary of seven hundred words of the language.

EDUCATION IN BAVARIA, by Sir Philip Magnus. This is the title of No. 2 of a series of monographs published by the Industrial Education Association of New York, and is a reprint of the observations of Sir Philip Magnus on industrial education in Bavaria. It is a timely and excellent contribution to this subject. The monographs of this association are issued bi-monthly at twenty cents each, or $1.00 per annum.

THE SANITARY CONDITIONS AND NECESSITIES OF SCHOOL-HOUSES AND SCHOOL LIFE is one of four pamphlets published by the American Public Health Association, Concord, N.H. The other three deal with Healthy Homes, Infectious Disease, and Cause of Diseases among Workmen. The four essays have been written by eminent specialists in each subject, and are the outcome of four prizes aggregating $1,100, offered by Mr. Henry Lomb, of Rochester, N. Y. They are exceedingly valuable from the plain and direct manner in which they are written, their practical suggestions for preserving the health, and the suggestions they contain for building and ventilating houses. The advice they offer, if carried out, would undoubtedly lead to a great decrease in suffering and misery. The four essays may be had for twenty-five cents.

PRACTICAL PHYSICS FOR SCHOOLS, *Vol. I., Electricity and Magnetism*, by Balfour Stewart and W. W. Haldane, Gee., *London*, MacMillan & Co., New York, 1888.

This is a magnificent little book of about 200 pages; which no person teaching physics in our public schools should be without. It forms a hand-book, giving directions for quantitative experimental demonstrations; so full and complete in their course, so concise in their wording, and so clear in their meaning and illustrations, that we cannot well imagine an improvement on the presentation of the subject.

Dr. Lorenzo Gordon Yates, Cor. M. S. F. Micr. Soc., Assoc. Memb. Philos. Soc. of London, etc., of Santa Barbara, Cal., U. S. A., assisted by John Gilbert Baker, F. R. S., F. L. S., etc., of the Royal Herbarium at Kew, England, is preparing a cheap work on "*All Known Ferns.*"

SCRIPTURE READINGS for use in the public and high schools of Ontario. We have to thank the Minister of Education of Ontario for a copy of this work. The names of the committee of eminent men representing the leading religious bodies of the Province of Ontario, who have carefully examined and sanctioned the use of the scripture readings for high and public schools, are a sufficient guarantee that the selections are in every way suitable to meet the general desire for the promotion of religious instruction in the schools of that province. Perhaps a clue to the wonderful success of the public school system of Ontario may be found in the declaration made by the educational department when adopting this volume of selections from the scriptures for the use of the schools: "Christianity is the basis of our whole system of elementary education, and its principles should pervade that system throughout."

ENGLISH CLASSICS for Indian University students: Goldsmith's *The Traveller* and *The Deserted Village*, edited by Arthur Barrett, B. A., Professor of English Literature, Elphinstone College, Bombay. Scott's *Marmion*, edited by Michael MacMillan, B. A. Shakespeare's *Much Ado about*

Nothing, edited by R. Deighton, M. A., Inspector of Schools, Bareilly. The main object in editing this series is that of explaining as simply and as clearly as possible everything that in point of thought or idiom is likely to prove a difficulty to a foreigner. While these classics are designed for a special class of students, they will be found of equal value to English students everywhere.

MacMillan's Progressive French Course, first year, by G. Eugene-Fasnacht. *The Teacher's Companion* to MacMillan's Progressive French Course, first year, by G. Eugene-Fasnacht. *Florian's Fables*, with philological and explanatory notes, exercises, dialogues and vocabulary, edited by the Rev. Charles Yeld, M. A. These are handy and admirable little books for the student of French, and contain copious notes on the text, and sufficient vocabularies,

The Manual Training School: Its aims, methods and results, with detailed courses of instruction in shopwork and drawing. By Prof. C. M. Woodward, of the Manual Training School, Washington University, St. Louis. Six by nine inches, cloth, 374 pages. Price $2.00. D. C, Heath & Co., Publishers, Boston, New York and Chicago.

This book is exceedingly valuable on account of its practical nature. Full instructions are given as to the organization and conducting of a manual training school. It contains courses of study, programmes of daily exercises and working drawings, and descriptions of class-exercises in wood and metal. In the chapter on the Complementary Nature of Manual Training, the author says, "Teach language and literature and mathematics with a view to make each child a master of the art of verbal expression. Teach mechanical and free drawings with the conventions of shade and color, and aim at a mastery of the art of pictorial expression; and lastly, teach the cunning fingers the wonderful power and use of tools, and aim at nothing less than a mastery of the fundamental mechanical processes. To do all these things while the mind is gaining strength and clearness and material for thought, is the function of a manual training-school."

An Explanatory Digest of Professor Fawcett's Manual of Political Economy. Cyril A. Watters, B. A., has prepared a digest of the late Professor Fawcett's well-known manual of Political Economy, for the use of candidates preparing for examination. It will be found a helpful explanatory guide to the more important principles of the science.

Conscious Motherhood, the useful book mentioned in the last number of the Review, has the special sanction of Miss Peabody, to whom it is dedicated. It is published by the Inter-state Publishing Company, 30 Franklin St , Boston.

BOOKS RECEIVED.

The Concise Imperial Dictionary, J. E. Bryant & Co , Publishers, Toronto, Ont.

Sea-Side and Way-Side; Nature Readers, No 1: D. C. Heath & Co , Publishers, Boston.

An Elementary Geography of the British Isles, by Archibald Geikie; Publishers, MacMillan & Co., London and New York.

A Second School Poetry Book, MacMillan & Co , Publishers, London & New York.

Twelve English Statesmen; No. 1 , William the Conqueror; London, MacMillan & Co., and New York.

EXCHANGES.

The American Geologist, Vol. I., No. 3, is before us. We have here a geological journal in the best sense of the name. Its staff of editors alone is a guarantee of its value. Its editors and proprietors are the following: Prof. Samuel Calvin, University of Iowa; Prof. Edward W. Claypole, Butchel College, Akron, O.; Dr. Persifor Frazer, Franklin Institute, Philadelphia; Dr. Lewis E. Hicks, University of Nebraska; Mr. Edward O. Ulrich, Geological Survey of Illinois; Dr. Alexander Winchell, University of Michigan; Prof. Newton, H. Winchell, University of Minnesota Single numbers thirty-five cents Yearly subscription $3.00.... *The Swiss Cross* for April is a valuable number. The first article, "The Geology of the Sea-Floor," is especially interesting at the present time, on account of the discussion upon the respective merits of Darwin's and Murray's theories of coral island formation....In *Century* for April is a valuable illustrated article, "The American Inventors of the Telegraph," which contains portraits of those who invented and helped to perfect the system. There is also a full explanation of its workings.... *St. Nicholas* for April opens very seasonably with an article, "What makes it Rain?" which is very instructive reading for old or young. "Child-sketches from George Eliot," is another excellent article in this number....The *Scientific American* is a weekly paper, that has for nearly half a century kept a faithful record of scientific growth and activity. Its pages have stimulated many a youthful student to think and work. Two excellent illustrated articles in recent numbers, are descriptions of the Lick Observatory in California, and the proposed International Exhibition in Paris in 1889.... *The Popular Science Monthly* for April contains among other valuable matter, educational and scientific, an illustrated article on "The Earliest Plants," by Sir William Dawson. There is a thoughtful letter on the lack of individuality in our schools ....*Farm and Fireside*, the supplement of the Toronto *Weekly Mail*, has been especially valuable of late to working botanists and agriculturists from its illustrated articles on grasses, grains, potatoes, with proper methods of cultivating these....The Halifax *Presbyterian Witness*, an eight page weekly, devotes each issue, not only to the discussion of religious questions, but takes a healthy interest in educational, literary and other timely topics....The Sackville *Argosy*, published by the students of Mt. Allison University, is one of the best conducted and most neatly printed of our college exchanges....*Bookmart* for April, from Bookmart Publishing Company, Pittsburg, Pa., has been received. This magazine is unique, in that it publishes much that is valuable in literature, which does not find its way into other periodicals.... *The Illustrated London News* for March 31st and April 7th, are of great value to the historical student, as they contain illustrations and descriptions of the last hours of the Emperor of Germany, and of the entrance of his successor to imperial life.

N. S. SUMMER SCHOOL OF SCIENCE, 1888.

The School will convene on Monday, July 23rd, at 7.30 p. m., in the Convocation Hall of Pictou Academy, and will close August 2nd.
Opening address by F. H. EATON, M. A.

FACULTY OF INSTRUCTORS:

A. H. MacKay, A. B., B. Sc., F. S. Sc., [Lond.], Principal Pictou Academy, President and Instructor in Zoology.

A. G. MacDonald, A. M., Inspector of Schools, Antigonish, Instructor in Land Surveying and Field Work.

F. H. Eaton, A. M., Normal School, Truro, Instructor in Physics.

E. J. Lay, Esq., Inspector of Schools, Amherst, Instructor in Botany.

H. W. Smith, School of Agriculture, Truro, Instructor in Chemistry.

John Stewart, M. D., Edin., Pictou, Instructor in Physiology and Hygiene.

A. J. Denton, A. B., Halifax Academy, Halifax, Instructor in Geology.

A. J. Pineo, A. B., Pictou, Instructor in Mineralogy.

A. Cameron, Esq., Principal of Yarmouth Academy, Instructor in Astronomy.

J. B. Hall, Ph. D., Normal School, Truro, Secretary.

J. D. Sprague, Esq., Liverpool Academy, Asst. Secretary.

Courses of Study:

ZOOLOGY.

Lectures.—[*a*] Collection and general classification, [*b*] Insects, [*c*] Birds; [*d*] Dissection of a few type forms.

Preparatory Work.—[*a*] Classification as in Dawson's *Hand-Book* down to orders; [*b*] Dissection and description of any ten species as in Colton's *Practical Zoology*. [*c*] Collection of fifty Zoological specimens (Nova Scotian), as insects; microscopic slides, bird skins, etc.

BOTANY.

Lectures.—[*a*] Plant morphology; [*b*] Relation of parts of flower; [*c*] Classification and Explanation of *Key to the Orders*; [*d*] Analysis of common Phenogamous plants; [*e*] Study of trees, grasses, ferns and mosses; [*f*] Hints on preparing and preserving specimens.

Preparatory Work.—[*a*] Gray's *How Plants Grow*; [*b*] Analysis (or drawings illustrating important points of structure) of fifteen plants not figured or described in detail in books; [*c*] Fifty Nova Scotian Species named and mounted.

PHYSICS.

Lectures.—[*a*] Physical properties of matter; [*b*] Atmospheric Pressure; [*c*] Specific Gravity; [*d*] Work and Heat

Preparatory Work.—[*a*] Properties of matter; Dynamics of Fluids and Heat, as in Gage's Physics, Chapters I. II. and III.; [*b*] Written report of experiments performed during the year, with descriptions of apparatus used. Experiments illustrating the above subjects performed in presence of instructor. Those who intend to take this course are asked to notify the instructor at once; and to make a report at the end of each month.

CHEMISTRY.

Lectures.—[*a*] Hydrogen and Oxygen; [*b*] Nitrogen with its compounds, [*c*] Carbon and its compounds; [*d*] Chlorine and its compounds, [*e*] Atomic Theory.

Preparatory Work.—[*a*] Chemistry Primer; [*b*] Written report of experiments performed during the year, with a description of the apparatus, materials, and results; [*c*] Experiments performed in presence of instructor.

PHYSIOLOGY

Lectures.—[*a*] Anatomical data; [*b*] Chemistry and Physics of the Digestive System; [*c*] The Circulatory system; [*d*] The Respiratory system; [*e*] Nervous system; [*f*] Practical Application of the Laws of Physiology to Individual and Social Health.

Preparatory Work.—Huxley and Youman's text-book.

Land Surveying and Field Work.

Lectures and Practical Demonstrations.—[*a*] Adjustments and use in the field of Transit and Theodolite; [*b*] Determination of magnetic variation; [*c*] Chain and Traverse surveys of some irregular field, and keeping of necessary Field Book; [*d*] Determination of Heights and Distances.

ASTRONOMY.

Lectures and Demonstrations.—[*a*] Use of Sextant in determining Latitude and Longitude; [*b*] Evening Study of Constellations.

Preparatory Study.—Lockyer's Astronomy and Belcher's almanac for 1888. Those who wish to take this course are requested to correspond with the instructor. notifying him of the fact, and stating what part of the study is most interesting to them, and what difficulties they may have encountered.

GEOLOGY.

Lectures.—[*a*] Aqueous Agencies, [*b*] Igneous Agencies; [*c*] Pre-carboniferous Rocks; [*d*] Carboniferous Rocks; [*e*] Post-Carboniferous and Drift. Special reference to Nova Scotia Geology.

Preparatory Work.—[*a*] Shaler's First Book in Geology; [D. C. Heath & Co., Boston], [*b*] Collection of 50 fossil rocks or other geological illustrations.

MINERALOGY.

Lectures.—[*a*] Principles of Classification; [*b*] Directions for Laboratory work and Supervision of same.

Preparatory Work.—[*a*] Crosby's *Common Rocks and Minerals*; [*b*] Collecting and naming 50 Nova Scotian minerals; [*c*] Determination by blow-pipe and chemical tests of fifteen Nova Scotia species selected by examiner.

Examinations, Certificates, Prizes and Exercises.

Before the close of the school, each instructor will hold an examination in the subjects of his department, and to those students who shall be reported as having undergone a satisfactory examination in three or more subjects, the faculty will award a certificate or diploma.

For examination purposes, the work of each subject will be divided into three sections of equal value as follows: [*a*] Prescribed text-book and lectures; [*b*] Practical and original work, such as dissecting, experimenting, etc.; [*c*] Collections, mountings, apparatus. The purpose of this arrangement is to lay the chief stress on *real* knowledge of a practical character, rather than on knowledge derived chiefly from text-books.

The lectures and demonstrations during the session of the school are intended especially to elucidate facts and principles that are more or less obscure, and to exhibit the best methods of teaching elementary science. All laboratory work will be done by the aid of the simplest equipments such as are within the reach of the common schools of Nova Scotia.

A prize of $10.00 will be given for the best set, and another prize of $5.00 for the second best set, of home made apparatus adapted for the use of common schools in illustrating the principles of Physics and Chemistry.

Excursions to the Coal Mines, Glass Works and Nova Scotia Steel Works will be arranged. In addition, there will be numerous excursions in various directions for collecting specimens in Botany, Zoology, and Mineralogy.

Besides affording its students an opportunity to become acquainted with the best methods of acquiring and teaching the natural sciences, the Summer School brings together in pleasant holiday association many of the best teachers of the province; and so not only enlarges each one's circle of acquaintance, but helps to promote a higher professional enthusiasm, and to cultivate a more liberal educational spirit.

In addition, Pictou with its bracing air, magnificent harbor and unique scenery, is unsurpassed as a summer resort; and those interested in the objects of the school cannot spend two weeks elsewhere in midsummer more pleasantly and profitably.

To defray necessary expenses a tuition fee of $3.00, payable in advance, will be charged. Board may be obtained for $3.00 per week. Prescribed books may be had at the Pictou bookstores. It is expected that reduced rates will be available on all railway and steamboat lines.

Applications from those wishing to attend the school should be made to the Secretary as early as possible—at latest before June 1st, 1888. In order to facilitate the construction of a time-table, the applications should specify the courses which the applicant intends to take.

Further information may be obtained from the President, the instructors, or the Secretary.

J. B. HALL,
Secretary.

Truro, March 1st, 1888.

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The Subscriber begs to call the attention of Teachers to his carefully assorted stock of

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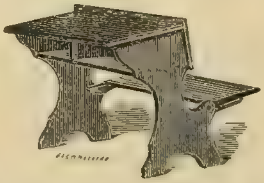

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PRESS NOTICES

A weekly journal of the highest character. . . Will unquestionably rank with the most comprehensive and valuable periodicals of the kind now published.—GEORGE WILLIAM CURTIS, in the "Easy Chair" in *Harper's Magazine* for March.

Takes instant rank as the leading journal of horticulture, landscape art and forestry published in the country. —*Philadelphia Press.*

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It is the ablest and most attractive paper of its kind that ever appeared in the United States.—*Troy Telegram.*

GARDEN AND FOREST is remarkable for the rare excellence of its illustrations. . . The drawings of flowers in each number are admirable, and the landscape views are a surprise in their delicacy of finish.—*Buffalo Courier.*

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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Editor for New Brunswick

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The REVIEW is issued from the office of Barnes & Co., St. John, to whom subscriptions may be paid if convenient.

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END OF VOLUME I.

With this number the first volume of the REVIEW is closed. During the eleven months that it has been in existence there have been enrolled as subscribers upwards of one-half of the teachers of the Atlantic Provinces of Canada. This generous support has assured its permanence.

It has largely depended on its merits to increase its circulation. Its editors have not been able amid the pressure of other duties to devote any extraordinary means to extend its circulation. The little leisure that has been afforded them has been devoted to making the REVIEW helpful to their fellow-teachers. That their efforts have not been in vain, a liberal support and a constantly increasing subscription list abundantly testify.

To the many warm friends who have aided and encouraged the REVIEW we extend our liveliest acknowledgments. Teachers in every position, from the university to the primary school, have given it their unqualified approval and encouragement. The press has commended its aims and the character of its work. Talented contributors have made it more valuable by discussing in a practical and impartial manner important educational questions. Inspectors of schools have, by their unremitting efforts in behalf of the REVIEW, extended its circulation; and it is but due to these gentlemen to say, that owing to their unselfish labors the REVIEW to-day is self-supporting.

With such encouragement the promoters of the REVIEW assure their readers that they will endeavor in the future to make it more than ever worthy of their support.

A glance through the columns of the REVIEW for the past year shows the progressive character of its work. Its pages have been devoted to the interests of the teachers of the Atlantic Provinces. Especially has it been the means of creating a wider and deeper interest in natural science subjects, and no expense has been spared in so illustrating these subjects as to make them available in the class-room.

The value of the lessons of the "Ferndale School" series in directing attention to insects injurious to vegetation; how to recognize them; the study of their life-history, and how to lessen their ravages, has created an interest that has extended beyond the school-room. We have been unable to supply the demand for earlier numbers of the REVIEW containing this series. It is in contemplation to publish the series in book form, revised and re-written.

We have been slow to fill the pages of the REVIEW with "ready-made" lessons, but we have aimed to supplement deficiencies in our text-books and give such hints and material as the progressive and intelligent teacher could use with advantage in preparing for the work of the class-room.

Sketches of eminent teachers, natives of these provinces, who have won distinction at home and abroad, have lately appeared in the columns of the REVIEW. These will be continued in the future.

Not the least pleasant feature of the year for the editors of the REVIEW has been the consideration with which their patrons have overlooked any irregularity and omissions. Where subscribers' names have had, in many cases, to pass through several hands and were hurriedly written, it was impossible at all times to guard against error. We have not received a single ill-natured complaint during the year, while the kind and courteous manner in which our correspondents have preferred their requests, has made it a very great pleasure to attend promptly to them.

In this connection we may mention the very cheerful and hearty co-operation of our publishers—Messrs. Barnes & Co.—as well as every one in their establishment, to ensure the prompt and careful distribution of the REVIEW. The care that has been taken to make the REVIEW first-class in its mechanical arrangement has been so fully shown in every issue during the year that we need only make a passing reference to it here.

The total number of copies of the REVIEW issued during the year, including this number, has been 21,350 copies, or an average of nearly 1,800 copies a month. Thus it will be seen that the REVIEW has been an excellent advertising medium during the past year, and it is every day becoming more valuable.

SPECIAL NOTICE.

Will the few subscribers who are in arrears from the first of our year kindly remit at once, so that we shall not be put to the necessity of specially reminding them. Our expenses each month are heavy and we desire to meet them promptly. Let us begin a new year with all old scores wiped out.

The next number of the REVIEW, beginning Vol. II., will be issued the 10th of June, the anniversary of the day on which Vol. I., No. 1, was issued. A full programme of the Interprovincial Convention will be published, a sketch and portrait of Dr. Th. H. Rand, and other interesting matter. This edition will amount to 3,000 copies. Those of our readers whose subscription has expired will please notify us of a desire to renew, in order that they may receive the paper promptly.

THE INTERPROVINCIAL CONVENTION.

Very satisfactory progress is being made in the arrangements for the Interprovincial Convention. The Committee of Management have so far had the most cordial and gratifying responses from the gentlemen selected to address the Convention at its various sessions. The committees which have the work of the sections in charge have arranged excellent programmes, and have been singularly fortunate in their choice of assigning the work to representatives of our provincial teachers. The local arrangements are in the hands of an energetic committee whose names are a guarantee that nothing will be left undone to make the conditions under which the Convention will meet entirely favorable. The greatest interest and enthusiasm prevails among the teachers generally with respect to it, and it seems safe even at this distance, to say that in this Convention, St. John will see the greatest educational gathering which has ever taken place in the Atlantic Provinces.

A full programme of varied and interesting exercises is rapidly approaching its final shape.

The meeting will be a memorable one in many respects, and will possess, in addition to its programme of purely educational work, many features of popular interest.

The list of speakers, it is hoped, will include such distinguished names as Sir Wllliam Dawson; Col. Francis W. Parker, of Quincy and Cook Co. fame, the author of inspiring educational books, the great American exponent of the "new education;" Dr. Schurman, of Cornell, a native of our own Maritime Provinces, who has won an eminent place as a scholar and a teacher; Principal Rand, the organizer of free school education in Nova Scotia and New Brunswick, and the honored head of one of the foremost denominational colleges in Canada; Sir Leonard Tilley, whose connection with the development of education in New Brunswick is a matter of history, and whose deep and unfailing interest in the progress of education is as fresh as ever; Judge King, who, if not the father, is certainly the god-father of free schools in New Brunswick, whose enlightened statesmanship gave this Province the priceless blessing of free education; Premiers Blair, Fielding and Sullivan, as representatives of the present administration of education in the Maritime Provinces; Superintendents Crockett, Allison, and Montgomery, heads of departments, together with prominent educational workers in normal schools, inspection, secondary and common schools.

Public meetings are to be held each evening, at one of which the Presidents and Professors of the leading

Maritime Province Colleges are to discuss a popular phase of collegiate education, and this session promises to be one of the most interesting of the convention. The presence and the words of such men as Dr. Sawyer, of Acadia, Drs. Inch and Harrison of Mt. Allison and the University of New Brunswick, Dr. Forrest, of Dalhousie, and their fellow-laborers in collegiate education, cannot fail to be both inspiring and instructive. All classes of educational workers will find in this meeting features of peculiar interest to themselves.

The bringing together of the teachers of the three Provinces for deliberation on the problems of education, the social and professional advantages which ought to result from this, the enlargement of the educational horizon which our provincial relation has hitherto prevented, the development of the *esprit de corps* of the profession, and the stimulation of public interest in educational work and educational workers must prove a great advantage to teachers and to the cause of education.

The attractions of this meeting will be so many and so various that we believe no progressive teacher can afford to miss them. And the old Mechanics' Institute, in St. John, in which so many important public meetings have been held in the course of its long and useful life, ought to take a fresh lease of usefulness from receiving within its time-honored walls a gathering so representative of the culture, the eloquence, the wisdom and experience of the Maritime Provinces.

SOME ENGLISH VIEWS OF EDUCATION.

A report of twenty-one folio pages has been received by the London School Board (Great Britain) from a special committee appointed by it a year ago "to consider the present subjects and modes of instruction in the Board schools, and to report whether such changes can be made as shall secure that children leaving school shall be more fitted than they now are to perform the duties and work of life now before them." In the course of an able editoral on this report, *Nature* says "its main criticism is 'that the physical or bodily side of education, including the development of muscular strength, of the accuracy and sense of color and proportion of the eye, and of the pliancy and dexterity of the hand, is almost entirely neglected; and that the mental or brain work, which occupies the great bulk of the time in schools of all kinds, is composed for too much of appeals to the memory only, resulting at the best in the retention in the child's mind of a mass of undigested facts and far too little of the cultivation of intelligence.' The kindergarten principle is strongly approved of, and the first recommendation is 'that the methods of the kindergarten teaching in infant schools be developed for senior scholars throughout the standards in schools so as to supply a graduated course of manual training in connection with science teaching and object lessons.'" "On one point," *Nature* continues, "the committee is very distinct, and there is a singular unanimity among the witnesses that the attention now paid to spelling and grammar is excessive if not entirely worthless. There is a curious table, too, in the appendix, which gives the result of inquiry as to the subjects of instruction most or least preferred in the various schools. Grammar is so unpopular with both boys and girls that it almost always attains that bad pre-eminence. Spelling or dictation comes second. In fact, there is no doubt that the children dislike what they feel does not add either to their pleasure or their real knowledge. It is proposed that the time now given to spelling, parsing, and grammar generally, be reduced."

It is not long since the School Boards of London, Liverpool, Bradford, Birmingham, and other towns to the number of over 120, asked for a Royal Commission of Inquiry with reference to English spelling reform. A capital summary of the English view is published by MacMillan & Co., London, from the pen of Dr. Gladstone, Fellow of the Royal Society, and member of the London School Board. This small volume of eighty pages gives a careful, deeply interesting and comprehensive view of what the irregularities of English orthography cost the English people as compared with educational systems of other leading peoples of Europe. The literature on this subject is already becoming quite extensive, and it is the duty of educationists to study the subject long before any action should be taken.

IN THE *Swiss Cross* for May is a suggestion from Mr. Jas. Vroom, of St. Stephen, proposing the formation of a Gray club in every large chapter of the Agassiz Association, as a fitting memorial of the late Professor Asa Gray. The objects of the club would be "to record all the native and introduced plants found growing uncultivated in the neighborhood; to encourage original observation on the part of the members, and to make public in some way any discoveries that seem to the club to be of special interest." The editor of the *Swiss Cross* states, that by a pleasing coincidence, such a memorial chapter was completing its organization just as Mr. Vroom's suggestion came to hand.

EDITORIAL NOTES.

WE remind contributors to these columns that we desire to know their names before their contributions can be inserted.

THE excellent and practical suggestions which our correspondents have made in regard to tree planting on Arbor Day, will, we hope, be carefully studied and faithfully carried out.

IN ANOTHER column we publish, under the head of "Educational Opinion," some of the views of inspectors and others, whose observation and experience enable them to speak with weight on the merits and defects of our common school education. Especially are school inspectors enabled to form accurate judgments. These opinions, which we hope to continue in next issue, while they are assuring and satisfactory in regard to our progress, are critical in pointing out where defects exist and what remedies may be applied.

THE various County Academies of Nova Scotia, according to the local newspapers, have had their terminal written examinations in April. Although not required by law, this procedure has, within the last few years, been adopted by nearly all the academies and many of the more advanced high schools.

ATTENTION is directed to the advertisement in another column of the Summer Course in Modern Languages which is proposed for St. John and Fredericton. The Berlitz Schools of Languages are deservedly popular, and we are glad that teachers and students here are to have an early opportunity to become acquainted with their methods.

THE death of Matthew Arnold removes from the English world of letters a notable figure. A poet, critic, scholar, his works are models of a pure and vigorous English. A son of Dr. Arnold who made Rugby school so famous, he was himself well known in educational ranks from the excellent service he rendered at different times to public education. He was for several years an Inspector of Schools in England, and afterwards was appointed a commissioner to visit the continent and report on the system of popular education in France, Germany, and other countries. He visited the United States in 1883, and again in 1886. His unfavorable criticism of American life and manners caused considerable irritation to citizens of the republic. During his later years Mr. Arnold had devoted himself to prose, of which he was an acknowledged master.

PROGRESS, the new weekly published in St. John, is a journal of considerable promise, and gives evidence of marked ability on the part of its editors, Mr. E. S. Carter and Mr. W. L. Sawyer. We wish its talented editors that success which their enterprise deserves.

THERE appears to have arisen some trouble about the choice of an Arbor Day for the City of St. John. The day chosen for New Brunswick is the 18th of May, a public holiday for the cities of St. John and Portland, and the regulation provides that the day set apart for that purpose shall be a regular school day. We hope that Arbor Day will not be allowed to pass unobserved in the two cities.

What better way of commemorating the landing of the Loyalists than to make a Memorial Day in which the school children would take part, one of the features of which would be the decoration of our bare streets and squares by the planting of trees in remembrance of those sturdy fathers who planted homes here a century ago? Cannot our energetic Board of School Trustees, aided by public-spirited citizens, take the matter in hand at once and assist the school children to make Friday, May 18th, 1888, the initial day in this movement?

NO ONE who visited the studio of Mr. J. C. Miles and his son at the recent exhibition of the work of their students could fail to be impressed with the importance of what is being accomplished there in the way of technical training. For several years the Messrs. Miles have, in their free school, taught many young persons the elements of free-hand drawing. Among these are young men engaged in mechanical pursuits, who have derived great practical benefit from the valuable course of instruction given. Among the pupils whose work called forth favorable comment at the recent exhibition, there were representatives of many industrial occupations, as well as teachers, and students preparing for courses in engineering and architecture. What an excellent opportunity does such training give to those who are ambitious to excel and become leaders in their occupation, and how it points out the necessity of the Government and the City assisting to make some provision for technical training, by the establishment of a school for that purpose. The "Daily Sun," a few days since, pointed out that "If the Messrs. Miles, without financial assistance, have been able to accomplish much and to continue the school so long, it is evident that the school board, or some such association as the Mechanics' Institute, could take up the work, give it a wider scope, and greatly enlarge its usefulness."

REV. PRESIDENT FORREST, D. D., F. S. Sc., (Lond.)

The University of Dalhousie College has of late been developing with extraordinary rapidity. Wealthy friends have been pouring in money, founding chairs and scholarships. The Faculty of Arts has added to it those of Law and Medicine. And, last of all, the new building has been formally opened, though not yet entirely completed, on Convocation Day, April 26th, by an "at home," where, from 8 to 11 p. m., about 1,700 of the *elite* of Halifax and the Province were present. This acceleration in the heretofore steady growth of the Provincial University of Nova Scotia is contemporaneous with the governorship and presidency of a man of extraordinary energy and business capacity. John Forrest, the subject of our brief sketch, was born in the County of Pictou, Nova Scotia, November 25th, 1842. He thus forms one of a notable Pictovian trio of Canadian University Presidents—Sir William Dawson, of McGill, Dr. Geo. M. Grant of Queens, and Dr. Forrest, of Dalhousie. In 1856 he entered the Free Church Academy in Halifax. In 1858 and 1859 he prosecuted his studies in the Presbyterian College at Truro. In 1861, at the early age of 19 years, he was appointed to a position in the Free Church Academy, and his energy did much to win for this institution its well merited reputation. In 1866 he was ordained a minister of St. John's Presbyterian Church, and from that time forward he was in the head and front of every philanthropic movement and effort in Halifax. In 1877 he was appointed a governor of the University. And some time later he made a personal and extensive study of the appliances and methods of work in the leading universities of the United States, with a special view to the future of Dalhousie. These studies were co-ordinated with the experience of the other Professors of the Faculty in the leading universities of Great Britain and Germany, in arriving at present results. In 1880 he was appointed "George Munro" Professor of History and Political Economy; and in 1885 he was unanimously elected President of the University. In 1886 he received the degree of D. D. from the University of Queens, and was elected a fellow of the Society of Science, Letters and Art, of London. As a lecturer his fluency and vigor of expression give him special power in the treatment of historical and political subjects. And the enthusiasm which characterizes him in all his work passes as an inspiration of energy into the minds of his students, in each of whom he appears to have time enough to manifest a personal interest. Under a genius so well fitted to push the interests of the University, and with a *Senatus academicus* containing some of the ablest scholars, in their special departments, of which Canada can boast, and with a building so thoroughly adapted to the requirements of modern demands, the University of Dalhousie promises to give the city of Halifax, both at home and abroad, a reputation and prestige which all its other great natural advantages have never, and could never obtain for it.

THE National Education Association of the United States, will meet this year in San Francisco on the 17th July—the same day on which the Interprovincial Association meets in St. John—and continue in session until the 20th July. For the sake of comparison we give the topics that will engage the attention of our fellow-workers across the border:

1. Literature in the reading courses of public schools. 2. How can our schools best prepare law-reverencing and law-abiding citizens? 3. Current criticism of our school system and what answer? 4. Practical education 5 The relation of the state to school books and appliances. 6. What is needed in our educational system to secure respect for common labor or way-working. 7. Spelling reform.

We have received circulars in connection with this Convention of the National Educational Association of the United States, to be held in San Francisco in July next. From 7,000 to 10,000 teachers are expected to be in attendance. Great preparations are being made by the whole State for the great event. Last year the Convention was held in Chicago, which appropriated $25,000 for the purpose, and the States of Illinois and Iowa respectively $2,500 and $5,000. New Brunswick and the City of Saint John are interested in a proportional degree in the Interprovincial Convention to be held about the same time.

PRACTICAL BOTANY.

No. III.—The Violets.

About ten species of violet are found in these Provinces, including the pansy of the gardens. This latter finds a place among wild flowers because it shows a tendency to escape from cultivation. It may often be seen growing wild, but a neglected garden in the vicinity will perhaps indicate whence it comes.

Most of our violets appear in May, but the present season is so late that June will be here probably before many of them are found in full bloom. These plants present so many interesting features that they may be made the subject of several consecutive lessons, and indeed may be studied throughout the summer. It is difficult to determine some of the species; but let the first one before the class, perhaps the common white violet, be thoroughly studied, and you will be surprised how readily the quick-witted pupils will notice differences between it and others. (How many know only two species of violet—the common white and the common blue violet; and yet we have three or four species of white violet, several species of the blue and violet blue, one white tinged with blue, and another yellow. All of these may not be found in one locality, but have the pupils institute a thorough search in their neighborhood and perhaps half of the total number of species may be found).

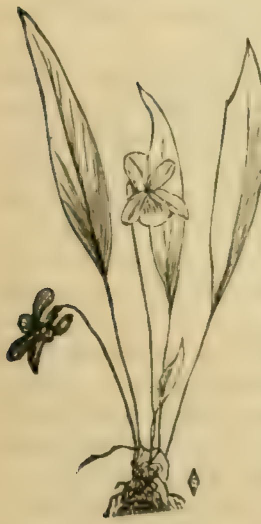
Let us look at some of the General Characteristics of this family of plants. We may conveniently arrange violets into two classes,—the first comprising those species which have leafy stems, and the second those in which the stem is underground, the leaves and flowers from which appear to spring directly from the ground. Notice that in both classes the root-stock or part below the soil is an underground stem, which sends out slender fibres (the real roots) in every direction. This root-stock has certain characters belonging to a stem which a real root never possesses, such as scales or rudimentary leaves, runners or subterranean branches which are produced later in the season. These runners sometimes produce small *flowers.* Flowers? When and where shall we look for them? What are they like? Yes, they are flowers, and you will require to search carefully for them. Later in the season and throughout the summer, if you examine the common white violet you will find small inconspicuous flowers, without any white petals. They are very minute and look like tiny buds. They may be found among the clusters of leaves, under or around which they are almost hidden. Sometimes they are found beneath rubbish about the roots. Although these flowers have no petals, they have distinct sepals (how many?) closing tightly around a pistil, with rudimentary petals (how many?) and stamens (how many?) Thus it will be seen that these flowers possess all the parts that flowers usually have—pistil, stamens, petals (incomplete and only rudimentary) and sepals. They are of great importance, however, as several species only perfect seeds by means of these little flowers. A small magnifying glass may be needed to make out some of the parts.

Probably the first violet brought into class for examination will be a stemless variety—either the common white or the blue violet. Have the pupils sketch the plant as a whole and then by parts. Commence at the root-stock. Try to familiarize the pupil's mind with the idea that it is an underground stem. Name other plants that have stems which lie on the ground or under it—the Solomon's seal (an interesting example), the raspberry, the couch-grass, the potato and many others. The leaves rise from the root-stock on wide petioles. They may differ somewhat in shape even on the same plant (this is especially the case with the two common species above named), but their general shape may be determined after careful comparison and study. The flowers are borne on the end of a stalk called a scape (notice whether there are any little bracts on this scape). The calyx with its five green sepals forms a cup for the rest of the flower (notice if there are any flower buds, how this protects the more delicate parts inside). Notice the appendage or little ear at the base of each sepal. The corolla has five petals. Let each petal be pulled off and sketched separately, describing particularly the size, veins, bearding. Notice that the lower petal is somewhat larger than the others and prolonged backwards to form a spur. (Whether this spur is long or short, stout or slender, is of importance further on in assisting to determine one species from another). This spur or sack serves as a reservoir for nectar. (Bees, butterflies and other insects visit flowers to obtain this nectar, which some of them elaborate into honey. Is the plant robbed of its nectar by these insect plunderers or does it receive anything in return? The more advanced pupils may be told that flowers are fertilized by the agency of insects. (Read Sir John Lubbock's "British Wild-flowers in relation to Insects," or Gray's "How Plants Behave.") Sometimes the side petals alone are bearded. Notice how the stamens closely surround the pistil. They are short, and it may be noticed that some are slightly united at the base. How many stamens? What are the anthers? What do the anthers contain? What are the filaments? What do you notice about those filaments that are opposite the lower petal of the corolla? Point out the pistil and its parts—the lower portion, called the ovary, in which are the rudimentary seedlings, the style, and the stigma which is turned to one side.

Notice that the flower is formed on the plan of five—five sepals, five petals, five stamens. Look for other flowers that have their divisions in fives; those that have them in fours, in threes. (The Trillium is a good example of this latter plan).

A description of the less common species of violet is here given. Should any insurmountable difficulty arise in determining a difficult species, it may be referred to the Question Department of the REVIEW.

THE LANCE-LEAVED VIOLET (*Viola lanceolata*, L.)



is shown in the margin in its natural size. It is found in wet places, on the pebbly shores of lakes or streams, and on the borders of swamps. It is distinguished by its erect lanceolate leaves which taper into margined petioles. Its flowers are white, with lilac veins, and very closely resemble those of the common white violet, except that the latter are faintly sweet scented. It is quite common in the southern part of the province of New Brunswick.

THE PRIMROSE-LEAVED VIOLET (*Viola primulæfolia*, L.)

is not so well known in these Provinces. It is found in the same situations as the lance-leaved violet, preferring moist places. Its leaves are oblong or ovate, somewhat heart-shaped at the base, with white petals marked with purple lines at the base. It has a creeping root-stock, and has smaller flowers than the lance-leaved form. It has been detected only in Charlotte County, in New Brunswick.

THE COMMON WHITE VIOLET (*Viola blanda*, Willd.)

is too well known to need a minute description here, and so is

THE COMMON BLUE VIOLET (*Viola cucullata*, Ait.)

The latter is very variable in size and shape of leaves, and it is sometimes found with white flowers.

Viola renifolia, Gray, is a species that requires some attention from the students of our flora. It is reported from New Brunswick, but seems to run very closely into the common white violet. It differs from the latter, in having reniform or kidney-shaped leaves, and is very pubescent, or hairy.

THE GREAT SPURRED VIOLET (*Viola Selkirkii*, Pursh. Goldie, 1822),

is a small and delicate species, quite rare, found in shady ravines and woods. It is distinguished by its long spur and its pale, violet-colored petals. It is a stemless species, like all the others mentioned above, and is an interesting and beautiful plant.

Of the stemmed violets the most common is

THE DOG VIOLET (*Viola canina*, L., var *Sylvestris*, Regel)

It is found in shady places, has light violet petals, a cylindrical spur half the length of the petals; leaves heart-shaped, the lowest kidney form, with crenate edges. The whole plant is from three to eight inches high. It is common in New Brunswick.

THE CANADA VIOLET (*Viola Canadensis*, L.)

is a large and showy species, often growing in rich woods to a foot in height. Has large flowers, petals white, shading into a light blue beneath, and flowering all summer. The leaves are heart-shaped, pointed, serrate, and are alternate on the stem, with ovate-lanceolate entire stipules. It has been found in rich woods on the upper St. John and its tributaries.

THE DOWNY YELLOW VIOLET (*Viola pubescens*, Ait.)

is an interesting and beautiful species, with conspicuous yellow petals, stems leafy above and bare below. Plant from six to fifteen inches high. Rather common and easily identified, as it is the only yellow violet found with us. [The round-leaved violet (*Viola rotundifolia*, Mx.,) with small yellow flowers, is found in Maine, and should be looked for in the Atlantic Provinces].

OTHER SPRING FLOWERS.

Some of our most beautiful flowers are found in early spring, and, as if to encourage us to study them, they are easily identified.

The MAY FLOWER *(Epigæa repens)*; the HEPATICA *(Hepatica triloba)*, a lowly modest flower of a pale blue color, with beautifully formed three-lobed leaves, is rare with us, although it should be looked for; the WIND FLOWER *(Anemone nemorosa)*, with its pale blossoms, may be looked for on the edges of woods; the COLTS-FOOT *(Tussilago farfara)*, with bright yellow flowers very like the Dandelion, but the flowers come before the leaves; the ADDER'S TONGUE *(Erythronium Americanum)* has a beautiful yellow flower, and belongs to the Lily family, as do the Trilliums, which come forth in early spring; the SPRING BEAUTY (*Claytonia Caroliniana*), a beautiful flower, white corolla with delicate rose-colored veins, is one of the earliest and most attractive spring flowers. All these should be in bloom between the 10th and the last of May.

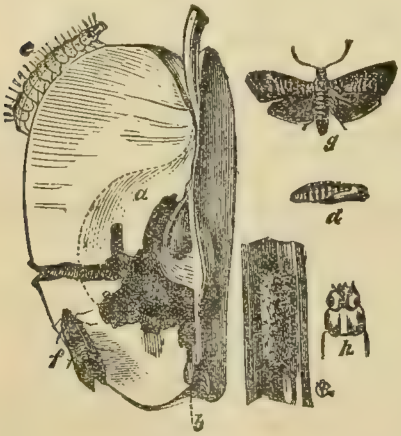
Perfect specimens of all these plants ought to be collected and dried for preservation. Gray's "How Plants Grow" contains full directions how to do this. If any correspondents wish it we will give a few hints in our next. In the meantime lay the foundation for a school herbarium by collecting the plants in the neighborhood of the school, especially those that are studied in class. Dry only perfect specimens, such as have root, stem, flower, between several folds of bibulous paper (old newspapers will do very well); change these papers frequently, say every day for a few days. A weight of not less than twenty pounds, and not greater than forty pounds, may be used upon the plants which have been placed in driers between two small boards.

FERNDALE SCHOOL.

No. XII.—The Codling Moth (*Carpocapsa pomonella*—Linn.)

Teacher. How many of you have seen apples eaten into the core in this way?

Scholars. (A multitudinous show of hands).



T. Well, here we have got an apple, the moth which is the originator of all the trouble at *f* and *g*, the larva at *e*, its head magnified at *h*, the cocoon at *i*, and the chrysalis at *d*. Does it do much damage, do you know?

S. Yes; one man said he lost over a hundred bushels of apples last summer by this moth. He called it the "Codling Moth." The apples fall from the trees before they are full grown and they are all worm-eaten within.

T. Correct. The "Codling Moth" is a foreigner. It came across from Europe about the beginning of the century, and of late it has been one of the most destructive pests to the apple-grower. It is estimated that in the State of Illinois, U. S. A., alone, it destroys fruit to the value of $2,750,000. But we know enough now to master it, and to save many thousand dollars in some single counties of our own province. Let us get first its life history, however. About the first week of June, when the apple blossoms open, they may be found on the wing at night, but they hide during day. Will you describe our specimen?

S. Its fore wings have small streaks of grey and brown across them, with a brownish spot and streaks of gilding on the inner hind portion. Its hind wings and body are of a yellowish brown, shining like satin.

T. Very good. Right in the centre of the apple blossom it deposits a tiny yellow egg. In a week or two it may treat as many as fifty blossoms in this way. In a week the egg is hatched and the small larva commences to eat its way into the newly forming apple just as the blossom has withered away. It keeps growing and eating for three or four weeks, and about the first or second week of July it eats its way out of the apple, a full grown small caterpillar. Please describe it.

S. Its head is blackish brown. Its body is flesh-colored and covered with small raised points which bear fine hairs.

T. Correct. It may then let itself drop gently from the apple to the ground by means of a fine thread, and after selecting some shelter or crevice, it proceeds to spin its small cocoon. Often it crawls down the stem of the tree. Please describe the cocoon which is figured at *i*.

S. It looks like paper, white inside, but on the outside there are small fragments of rubbish mingled with fine silken threads.

T. In about two weeks the chrysalis bursts forth from the cocoon into a perfect moth—that is, towards the end of July. These proceed to deposit eggs, as did the first brood, on the apples. The second brood of larvæ sometimes leave the apple before it is collected and form cocoons in sheltered crevices, from which they emerge as moths about the first of next June. But great numbers of them do not leave the apple until after it is collected and barrelled. Have any of you noticed this?

Jim. I have seen a lot of these little cocoons in small crannies under the hoops of apple barrels in winter.

T. What should be done with them?

S. They should all be picked off and killed; because if not, each one may destroy as many as fifty apples next June.

Jim. But how can the cocoons hidden under rubbish in the orchard be found?

T. Not very easily. But this plan has been found to catch them in summer time: A band of cloth at least five or six inches wide is tightly bound around the trunk of the apple tree about the first of June. When the larvæ go to spin their cocoons they generally wander along the trunk of the tree; coming to the band of cloth they find under it splendid shelter, and there spin their cocoons. This band should be loosened and examined once a week and all the chrysalids killed.

JIM. But they say there is a better way lately found out. They spray the trees with water containing Paris Green, and they are not troubled with the insect at all.

T. You are right. Since your plan was discovered only a few years ago millions of dollars worth of fruit have been saved by it in America.

JIM. A neighbor of ours got a force pump and sprayed his trees so thoroughly that nearly all the leaves were withered, and he lost all his apples instead of saving them. What was the trouble?

T. Paris Green contains a deadly poison called arsenic, and if too much is applied even to the leaves of a tree they die.

S. How can people know how much to use?

T. One ounce of Paris Green, thoroughly stirred up in every fifteen gallons of water, is found a good proportion. Paris Green does not dissolve in the water, so that you must remember the water is to be kept well agitated while the spray is being thrown.

JIM. But the apples would be poisoned, wouldn't they, with the Paris Green?

T. The trees are sprayed once, just when the blossom falls, and the apple is very small; so that the amount of poison on one of them would not injure a human being. But before the apples are ripe in autumn every particle will be washed off by the rains.

JIM. But how, then, could the poison get into the core of the apple to kill the boring larva?

T. Where would the larva be just as the blossom is dropping off?

S. It would only be just hatched, and commencing to eat its way into the apple.

T. Correct. And the smallest amount of Paris Green is sure death to it; and some think it also frightens the moth away. Why do they spray the trees, then, just after the fall of the blossom?

S. Because about that time the eggs are being hatched, and the very first food the larvæ try to take poisons them.

T. When is a tree made sufficiently safe by spraying, would you think?

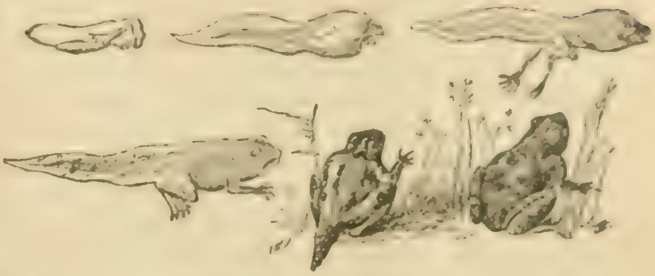
S. When every little forming apple has been touched by the poisoned spray.

T. What precautions should be taken where this remedy is used in an orchard?

VARIOUS S. Not to put more than one ounce in every fifteen gallons of water....To keep the water well stirred....To spray when the wind is calm, in the morning....To spray about the time when the first eggs begin to be hatched....Not to let any animals drink the poisoned water....Not to have any poisoned water and Paris Green where children might get at them....To be very careful always.

FERNDALE NOTES.

No. IV. The Frog and its Relatives.



The Development of the Frog.

The frog belongs to the animal province *Vertebrata* (Latin, *vertebra*, a bone of the back), and to the Class *Amphibia* (Greek, *amphi*, both; *bios*, life). They breathe by gills when young, as fish do in water. When mature, in our species, the gills disappear, and breathing is performed by lungs.

To study the development of the frog, take a pickle jar, with water and a little moss from a swamp, and a small portion of one of the gelatinous masses of frogs' eggs which abound during this month in every section of the country. Change the most of the water daily. The eggs are surrounded by a thick layer of albumen, the same as the white of a bird's egg. This swells very much in the water. When the minute egg is hatched a small tailed animal, like the first above, appears, with a tuft of fringe (gills) on each side of its neck. The hind legs appear, then the fore legs, the gills disappear, and finally the tail. Under a microscope the eggs and young tadpoles are very interesting, as they are more or less transparent, and show, in some stages very conveniently, the circulation of the blood.

Two orders of the amphibia are well illustrated in the Atlantic Provinces. 1. The *Urodela* (Greek. *oura*, tail; *delos*, visible), which never lose their tails. These are wrongly called lizards in these Provinces. But lizards are not *amphibians*; they belong to the *reptilia*. The order *Urodela* includes—(*a*) the Water Salamanders or Newts, which live in water, with tails flattened vertically, four fingers on its fore feet, and five on its hind feet. (Lizards have five toes on each fore foot, and are not found in Nova Scotia). Produced from eggs. Fore feet developed first. One species in collection of Pictou Academy. (*b*) The Land Salamanders. Produced alive. Tail not flattened. Found under old logs, stones, etc.

The second order is *Anoura* (Greek, *a*, without; *oura*, tail. The tails as well as gills of these disappear in the mature animal. We have three genera —(*a*) the Toads, of which one species is common. No teeth in its jaws. Hind limbs not so well developed or webbed as in the frog. Skin warty and glandular, (*b*) The Frogs, of which four species are found. Teeth always in the upper jaw. 1. The Spring or Common Frog. 2. The handsome, leaping, Leopard Frog. 3. The Wood or edible Frog. 4. The Great Bull Frog. (*c*) Pickering's Hylodes or, the Common Piping Frog. Its toes are not webbed and have small expansions at their tips, like the next genus. (*d*) The Tree Frogs. They have webbed toes with large disks at their tips which are supposed to act as suckers, enabling them to walk on the under side of limbs of trees. 1. The common, greyish, Tree Frog. 2. The rarer, Squirrel Tree Frog, or Little Peeping Hyla, as it has been called.

It will be capital amusement for scholars to find out how many of these may be found in their own school section. Specimens of each kind should be preserved by putting them in a wide-mouthed (glass-stoppered, if convenient,) bottle, filled with alcohol or whiskey, which will preserve them, although with a little change of color. We give the following tabular classification of those at present known to the writer:

Class. AMPHIBIA. (Nova Scotia).

Order I. Urodela.

Genus 1. *Water Salamanders* (*Triton*).
(1) The Water Newt.

Genus 2. *Land Salamanders* (*Salamandra*).
2) Yellow spotted S.
(3) Violet S.
(4) Red backed S.
(5) Salmon-colored S.

Order II. Anoura.

Genus 3. *Toads* (*Bufo*).
(6) American Toad.
Genus 4. *Frogs* (*Rana*).
(7) Spring Frog.
(8) Leopard Frog.
(9) Wood Frog.
(10) Bull Frog.

Genus 5. *Piping Frogs* (*Hylodes*).
(11) Piping Frog.
Genus 6. *Tree Frogs* (*Hyla*).
(12) Common Tree Frog.
(13) Squirrel Tree Frog.

ASTRONOMICAL.

"Among the Constellations" must, on account of the pressure upon our space, be relegated to next winter.

THE PLANETS.

Jupiter is in Scorpio, and on the 20th it will be very near Beta Scorpii. It rises early in the evening.

Mars is in Virgo, receding from Spica. On May 5th it was in conjunction with *Uranus*, being only about a moon-breadth distant. It is further west than Jupiter.

Saturn is in Cancer, approaching the cluster Præsepe, which has been taken by some observers for a nebulous comet. It is still further west than *Mars*. *Neptune* is in Taurus. *Venus* rises in the morning a little before the Sun and is in Pisces. *Mercury* will be in conjunction with the Sun on the 10th, when it becomes an evening star, though invisible for some time.

PROGRAMME FOR ARBOR DAY.

Let all in the school district—teacher, parents, boys, girls—be engaged in the work. Meet at nine o'clock, and during the forenoon plant trees, shrubs, the grounds having been prepared beforehand, and in the flower-beds plant seeds and flowers. Make a record, in a book kept for the purpose, of each tree planted.

We will suppose it is noon and all the trees are planted. Then, under some hospitable roof or roofs in the neighborhood, there is an ample dinner prepared by the ladies who have taken a warm interest in the work. This will be an excellent feature in the day's entertainment, and should not be overlooked. A little energy and forethought will secure its accomplishment. Or if the day be warm a pic-nic may be arranged on the school grounds.

After dinner a programme, something like the following, may be carried out:

Music—"Greeting"—by the school.
Reading of the Section of School Law setting apart an Arbor Day.
Opening Address.
Song.

Woodman Spare That Tree.

Woodman, spare that tree!
Touch not a single bough!
In youth it sheltered me,
And I'll protect it now.
'T was my forefather's hand
That placed it near his cot;
There, woodman, let it stand;
Thy axe shall harm it not.

That old familiar tree,
Whose glory and renown
Are spread o'er land and sea,—
And wouldst thou hack it down?
Woodman, forbear thy stroke!
Cut not its earth-bound ties;
O, spare that aged oak,
Now towering to the skies!

When but an idle boy
I sought its grateful shade;
In all their gushing joy,
Here, too, my sisters played.
My mother kissed me here;
My father pressed my hand—
Forgive the foolish tear;
But let that old oak stand.

My heart-strings round thee cling
Close as thy bark, old friend;
Here shall the wild-bird sing,
And still thy branches bend.
Old tree! the storm still brave!
And, woodman, leave the spot;
While I've a hand to save,
Thy axe shall harm it not. —*G. P. Morris.*

Dialogue—in which the pupils urge the merits and beauties of their favorite trees.
Essay—Historic Trees.
Song—"To the Woodland hie away."
Address—How to Care for Trees.
Recitations—by pupils, on subjects appropriate to the day.
God Save the Queen.

For the REVIEW.]

EXPERIENCE IN TEACHING—WHAT IS IT WORTH?

"The chief disturbing element in our educational system is an annual access to the so-called profession of teaching of several hundreds of young persons, mostly between sixteen and nineteen years of age."—*N. S. School Report.*

This being the case, can there be any wonder or surprise that our school system has not been as successful as its friends and supporters have wished? For twenty-four years our schools have been largely in charge of untrained boys and girls, "perplexed novices," whose natural resource "is to the practice of pure memoriter text-book recitations, with their consequent intellectual stagnation and sterility, and with the chances strongly in favor of this vicious method perpetuating itself." It is about time for a change in this line. We never could see the justice of the government paying inexperienced teachers the same as it paid experienced teachers of the same class. By so doing there was a premium for the work of the "perplexed novice," and a discount on that of the expert in the art of teaching, so far as the provincial allowance was concerned. This could have been partially remedied by giving a first-class licensed teacher the second-class grant for the first year's teaching, and an increase for the next year, if he prove to be successful. Even a graduate of a normal school should teach a term or two before drawing the allowance of his or her grade. It is to be hoped that the changes foreshadowed in the recent report of Dr. Allison will take place in Nova Scotia, at least, for then our schools will be doing their legitimate work. The common school has no right to teach professional subjects. These are not on either the common school or the academic course of study. Complaints have been made, and reasonably so, because of so much time being spent with two or three aspirants for this so-called profession, whilst the rest, especially the younger children, have been neglected. Even our normal schools have not been much more than common schools in this respect, since they have been doing the work assigned to the lower grades. If our normal schools are made, in every respect, what they should be, viz., purely for professional work, adding only such subjects as science, drawing, music, etc., then they would have larger claims upon the country. We have often thought that there should be a mercantile department in connection with these schools, where teachers could receive as good a business education as they could get in any business college. Under a good teacher of book-keeping they would receive more and better instruction in penmanship than is usually given to our teachers, and these then would be able to teach this very important subject much more successfully than they, as a class, have been doing, besides preparing pupils to keep accounts more accurately and neatly. It has often been remarked that it was the duty of the normal school authorities not to grant professional certificates to those pupils who show but little or no teaching talent. Such may be seen after a short time, when they should be advised to seek other avocations. This would tend largely to "an equalization of supply and demand in matter of available teachers as would make the profession of teaching at once more remunerative and more honorable." Again, if each pupil teacher, especially a male, were required to teach say five consecutive years, after graduation or being licensed, ere he began to study for another profession, there would be far less to make teaching a stepping stone to the detriment of "those who propose permanent identification with the profession." The time is come when something should be done to rid the profession of its "stepping stone" excrescences. B.

For the REVIEW.]

ARBOR DAY.

HISTORICAL REFERENCES.

Though Arbor Day is of somewhat recent origin, the importance it has reached throughout the United States and Canada justifies some references to its historical aspect. Probably no movement has spread more rapidly, or become more popular in modern times than this; and not without reason, for it is already bearing most valuable and abundant fruit for the nation, the school, and the home. As a matter of fact, the celebration of Arbor Day has grown out of the necessity of preserving and restoring the forest area. The history of systematic tree-planting reaches backward many years, and the practice developed only as the necessity for it arose in the ruinous effects of forest depletion. When large forest areas were cleared away, it was invariably found that the wealth of the country, the productiveness of the soil, the healthfulness of the climate and the flow of the rivers were very seriously affected. Wise and scholarly men, after much study and a long series of observations, traced these serious effects to their cause, and it was this class of men that brought tree-planting into practice.

Ceylon, St. Helena, Santa Cruz, Algeria, and portions of Germany, France, Spain and Italy, have in past times been reduced to barren and inhospitable wastes by the careless destruction of their forests. Asia Minor has been called the epitome of a dying continent. Ohio has experienced some of the effects referred to. Twenty-five years ago peaches were raised in abundance in that State, but peach culture in Ohio is a thing of the past. The climate has become colder and more dry and uneven. The springs are later, droughts are frequent, crops of different kinds less abundant and more uncertain, and everybody is familiar with the record of her devastating floods. The record of Nebraska and other Western States, and even of Massachusetts, is somewhat similar to that of Ohio.

It has thus become a well and widely recognized fact that the proper conservation of the forest lies at the very foundation of national prosperity; and having this conviction, several European countries a century or more ago began the work of preserving and restoring their forests. Forestry societies were formed, schools of forestry were in time established, legislation was improved, large and small areas were planted with different kinds of trees; but it was found that the preservation of the forest was dependent upon the due appreciation of its importance and value on the part of not merely a portion, but of all the people. Laws are of little avail unless they are the expression of the popular sentiment. How were the people to be led up to this appreciation? There is a German proverb which says: "What you would have appear in the nation's life you must introduce into the public school." Germany, therefore, introduced tree planting into the public schools throughout the country, and in the hands of enthusiastic teachers the treeless school plains soon found shade and shelter, and the school deserts were made to "rejoice, and blossom as the rose." Lessons on trees and forests were easily enforced under such circumstances, and soon Germany had a people that looked upon her 20,000,000 acres of forest with anxious solicitude, and the public schools became more effectual in forest protection than the national police. Regular "Arbor Days," so called, were not established in Europe so far as we know. Prussia has an income from her forest of $14,000,000. The expenses are $7,500,000. Leaving a net profit of $6,500,000. Saxony, Bavaria, Hanover and other countries pursue a similar forest policy with similar results.

In America, interest in tree planting has developed more recently. About twenty years ago several village societies were formed in New York State, one of their objects being the improvement of streets by the planting of trees; but to Nebraska belongs the honor of originating Arbor Day. About thirteen years ago, at the request of the State Board of Agriculture, the Governor appointed the second Wednesday in April as the day to be devoted to economic tree planting in that State, and it is claimed that 12,000,000 of trees were planted on that day. Every year since, this day has been similarly recognized in Nebraska. Other states soon followed Nebraska's noble example, until now nearly all the Western and several of the New England States have their annual Arbor Days, and most of them celebrate it in conjunction with their public schools. We are not quite certain, but think Indiana was the first state to proclaim a school Arbor Day; but it was soon found that while this celebration was educating the young people in the important lessons touching the beauty and vast utility of trees and forests, it was an important educator in other respects as well, and was rendering school premises not only more beautiful and comfortable, but more healthful, refining and attractive, and actually promoting school attendance.

The plan of planting memorial trees and groves in honor of illustrious persons or friends, and known as the Cincinnati plan, had its origin in 1882, and was introduced by Hon. Mr. Peaslee, Superintendent of Schools. Governor Foster had proclaimed April 27th as Arbor Day for the State. Mr. Peaslee addressed a circular to trustees, superintendents and teachers throughout Ohio requesting them to celebrate the day after the Cincinnati plan. No sight more beautiful, no ceremonies more touching, had ever been witnessed in Cincinnati. The school children were under the charge of Mr. Peaslee. Fifty thousand citizens covered the grassy slopes in the suburbs of the city. Many memorial groves were planted and thousands of trees. This was the first Arbor Day celebration in Ohio. The Cincinnati plan has been largely followed in other States, especially in Virginia and Connecticut. One of the leading journals of England has recommended the Cincinnati plan of tree planting celebrations among the public schools of Great Britain.

Arbor Day was first celebrated in Ontario in 1885, in response to a circular issued by the Minister of Education, requesting the schools throughout the Province to plant trees, shrubs and flowers on their premises upon the 8th of May. Though the circular was not issued till after the middle of April, 30,648 trees were planted and 253 flower beds were made. So gratifying was this result that in 1886 it was provided by law that an Arbor Day shall be annually observed throughout Ontario in connection with her public schools.

In Nova Scotia, provision has for three years existed for planting trees on school grounds.

In New Brunswick the propriety of planting shade and ornamental trees on school grounds was first formally discussed at the Sunbury and Charlotte Teachers' Institutes, in 1883, and resolutions were passed favoring such improvements. At the next Provincial Institute, held at Fredericton, a resolution was passed commending the subject to the general attention of the teachers. In May, 1885, St. Stephen celebrated the first regular school Arbor Day in New Brunswick, when over 200 trees were planted upon her school grounds, about one thousand citizens being assembled to listen to the programme of exercises and participate in the celebration. Moore's Mills and other places followed the example of St. Stephen during that spring, and at the Provincial Institute held in the June following, resolutions were passed commending the movement, and urging the Board of Education to provide for a school Arbor Day throughout the Province. In September of that year an address upon the subject was delivered at the Carleton County Institute, and published by the Woodstock *Press*. The following spring the Inspector of District No. 6 requested the schools under his supervision, through the local newspapers, to plant trees on the 24th of May. This request was responded to by forty-four schools, and over 1,600 trees were planted on their school grounds, chiefly in Carleton County, and other improvements made. St. Stephen's 1886 Arbor Day was even more successful than was that of 1885. At the Provincial Institute in June, 1886, the Arbor Day resolutions of the preceding year were reaffirmed, and on the 7th day of April, 1887, the Board of Education authorized an annual school Arbor Day for New Brunswick. This was observed last year by the planting of 8,179 trees and shrubs.

I. B. O.

Canterbury, N. B.

For the REVIEW.]

ARBOR DAY.

In our last number we advocated the planting of trees in connection with the schools throughout the country, and sought to show the advantages, which, we believed, would result if our suggestions were carried into effect. The season has now arrived when planting ought to be done, and, while again pressing the general question of arboriculture upon the attention of our readers, we wish at this time to bring to their notice certain matters of detail, which are important to be borne in mind when preparing for and while planting the trees. Sufficient care is not always shown in selecting young trees for planting out. If there is a good nursery near, this is much less likely to be the case, as the nurseryman, who understands his business, knows better than to supply poor, scrubby stock. But in the great majority of localities there are no nurseries, and even when they are to be found, many people cannot well afford to buy from them, so that the native woods have to be resorted to, and there many of the young trees are not such as it would be wise to choose for planting. Some are stunted, more are crooked, and numbers are knotty or have some defect that is apparent on slight inspection. These should be carefully avoided and none but straight, vigorous young saplings chosen. These are always to be found if a little trouble is taken to look for them, and they will repay the extra care by their superior appearance and better growth after re-planting. Some varieties of trees also are much more easily grown than others. The elm, maple, ash and birch, among common forest trees, cost little trouble, and a very slight amount of care suffices to ensure their successful growth. The beech, on the other hand, owing to its root, is much more difficult to deal with. Unless put out by a skilful planter it is very apt to fail, and the writer has noticed that in nearly all the instances of planting beeches, which he has seen, they have not done well. They live on for a year or two and then are very likely to die out or only exist in a sickly sort of way, so that the planter who chooses them bids fair to be disappointed in the results of his labour. Of smaller native trees the rowan is very ornamental and grows well. Such well known trees as the lime, horse-chestnut, acacia and willow are easily grown. The Lombardy poplar is frequently planted out, but it is a poor tree, has a short life, and is not to be recommended. Being a fast grower, it may be temporarily planted between trees of more value but slower growth, and can be removed after a few years, when the latter have reached fair dimensions. Having carefully selected the young trees, the planter must also exercise care in setting them out. Many persons seem to think that trees should be deeply planted. This is a common and serious mistake. The young saplings should be re-planted as nearly as possible to the same depth in the soil that they were in their native woods. If planted deeper their growth will be retarded for years, if not permanently injured. Should the soil to which they are removed be poor, the best way to improve it is to procure some of the virgin soil from the woods and substitute it for the other. Very little would be needed. Manuring to strengthen the soil is not nearly so good. It is well when the trees are put out to place a mulching of horse-dung over the roots, but not so close to the stem as to touch it. This mulching might be two to three inches in depth. It prevents the earth about the roots becoming parched in the hot dry weather, and retains the moisture necessary to the life of the young tree. The earth ought to be firmly pressed down about the roots, so that they may not be loosened by the wind, and if the tree is supported by being tied to a stake with some material which would not rub the bark, it will become all the more quickly fixed in the soil and will also have a straighter growth. When placed out the trees should be well pruned. Spare the knife and spoil the tree is a perfectly true variation of the old proverb. Many inexperienced planters are terribly afraid of the pruning knife, yet its judicious use is most essential. A tree requires at least a year to become thoroughly rooted in its new place, and all the nutriment it can get is needed to strengthen it in its early stages, and if this nutriment goes to leaves the tree is weakened and frequently dies. The branches should be well trimmed, and if the tree is not intended for timber, the top may be cut off, and in a year or two a luxurious growth of young shoots will take its place and the tree will spread out and have a thicker growth.

A good sized tree for transplanting is one from an inch to an inch and a half in diameter a foot from the ground, though, if care be exercised, those of larger size may be successfully planted. For ornamental purposes they may be placed about thirty feet apart. This may seem a great distance while the trees are young and small, but a few years changes all that and they will be better for having plenty of room.

We have gone into these details, as we think this subject one of much importance, and to ensure success, details of the nature we have mentioned must be attended to. We hope to see the attention of the several Provinces specially directed to this question of arboriculture. It is well within the scope of their duties, and they could, with little trouble, prepare and issue to the teachers short manuals or circulars giving instructions as to the simplest and best means of succeeding in tree-planting. Which Province will take the initiative in introducing the study of arboriculture into its system of education?

A. B. W.

Charlottetown, P. E. I.

For the REVIEW.]

ARBOR DAY MISTAKES.

As Arbor Day is approaching, when teachers, pupils, and many other interested ones are planning to plant trees, shrubs, etc., upon the school grounds throughout the Province, permit me to refer as briefly as possible to some of the mistakes which, in my judgment, were made last year. That mistakes should be made in engaging in an enterprise so new to most of our people, was to be expected, but let them be repeated this year in as few cases as possible. It involves much labor to take up and transplant trees. If the work be done intelligently and patiently, it will in most cases be effectual; if done hurriedly and carelessly, it is almost sure to be lost. One common mistake was

1. In *Selection.* The tree having been in many cases

(*a*) Taken from the forest where it was tall and spindling, with little top and less root, instead of from open fields or pastures, where the tree grows short, with a considerable top and numerous roots and rootlets, affording sufficient vitality to overcome the shock of transplantation.

(*b*) In being too large, sometimes from two to three inches in diameter, requiring more root to insure its growth than is generally taken up with such large trees. A tree from one inch to an inch and a half in diameter is much more likely to live, and, overcoming soon the shock of transplanting, it will sooner become a larger tree than the bigger specimen.

(*c*) In planting short-lived trees, such as poplar, etc. In having been taken from poor soil instead of from good, also from soil very unlike that of the school ground. The tree out of good ground is more likely to grow, even though the place where it is set is poor. It has more rootlets to draw nourishment from the soil.

2. In *Removal.*

(*a*) In cutting off roots too near the trunk, instead of cutting a circle from four to five feet in diameter.

(*b*) In forcibly pulling the tree out and breaking and tearing the roots, instead of taking time to dig carefully, cutting off the main roots here and there, and thus taking up with the tree a good portion of earth and leaf mould as well as rootlets.

(*c*) In having taken the trees from very rocky ground where mangling could not be avoided, instead of finding a place as free as possible from such hindrances.

(*d*) In having taken up the trees on the morning of Arbor Day, or the night before, and leaving them exposed till the following afternoon, thus drying the roots of the trees and insuring their death, instead of removing the trees at once to the excavations already prepared for them.

3. In *Planting.* (*a*) In digging holes too low and setting the tree too deep. If soil is shallow with a sub-soil of clay, a shallow excavation is best, preventing as it does the accumulation of water beneath the roots. If soil is deep, a deep hole is better, but the tree must not be set more than an inch or two deeper than it was originally; the roots must not be placed beyond the action of the air or heat. (*b*) In leaving vacant spaces about the roots, instead of carefully and

patiently filling under the roots with fine surface soil and packing it carefully with the hand when necessary. (*c*) In filling in about the roots with poor under soil instead of rich loam, hauled, if necessary, for the purpose. On many school grounds the soil is so poor as to warrant the death of almost any tree unless good soil is added. (*d*) In not trimming roots and top instead of cutting off with a sharp knife and saw all mangled roots, and, in the case of nearly all hardwood trees, a large portion of the branches, to balance a diminished root.

4. *In after care*, (*a*) In not multching, instead of placing round the roots (after tree was planted) some old straw or litter to keep the soil moist. Probably more trees die from this neglect than from any other cause. (*b*) In neglecting to water the tree during drought. (*c*) In neglecting to enclose the tree with stakes and slats where the premises were not fenced.

5. Probably some mistakes were made in the arrangement of the trees, they being in some cases too near each other. It would be well for each teacher to study out some good definite design before planting day arrives, consulting his trustees, as well as his older pupils, thus securing their interest and cooperation.

I. B. OAKES.

IN planting trees a proper proportion of pines and other evergreens should be chosen, not only for the shade and variety of form and foliage, but for their health-giving qualities. The pine with its constant exhalation of turpentine vapor and its never-failing foliage, ought to be planted in proper proportions about schools and dwelling houses, because it is beneficial to persons of weak lungs and its influence is unfavorable to the products of germ life. The same is true in a lesser degree of other evergreen trees. Moreover, they afford a pleasant shade in summer and in winter; and, mingled with other trees, they give a charming effect.

IN reply to some inquiries regarding the distribution of certain species of violet in Nova Scotia, Prof. Lawson, of Dalhousie College, sends the following interesting notes, which were received after that part of the REVIEW containing the article on botany had gone to press.

"*Viola lanceolata* is common about Halifax, in bogs, growing on infusorial mud, particularly, but also in wet fields. I have also seen it in Queens, and no doubt it is found in many other parts of the Province. It was collected at Halifax by Menzies, before the close of the last century—the same Menzies who accompanied Vancouver's voyage.

"*Viola primulæfolia* grows in only one spot, near Three Mile Church. The locality is growing into a suburban village of Halifax, known as Fairview.

"*Viola Canadensis* is scarce. I gathered it once at Newport. . . . It grows also about Windsor.

"*Viola pubescens* is quite rare with us. Has been found at Windsor and one or two other places. I once picked up a specimen on the railway platform at Bedford, but could not ascertain whence it came.

"The common, white, sweet-scented violet, *V. blanda*, is very abundant—our commonest violet by far. In Aiton's Hortus Kewensis it is credited as having been introduced to English gardens by the Duke of Kent. It was probably sent from Prince's Lodge, Bedford Basin.

N. B. SUMMER SCHOOL OF SCIENCE.

A Summer School of Natural Science will be opened in St. John on Tuesday, 3rd of July, 1888, and continue until Friday, the 13th July. This arrangement is on the condition that at least twenty-five students enroll themselves as members of the school before the 10th of June next.

A meeting for organization will be held at three o'clock p. m., on Tuesday, July 3rd, in the lecture-room of the N. B. Natural History Society, whose rooms and museum will be placed at the disposal of the members of the school. At the meeting for organization steps will be taken to make the N. B. Summer School a permanent institution.

The excellent collections in the museum of the Society, the great variety in the natural history resources and scenery about St. John, with its bracing atmosphere, should make this an opportunity of combining instruction in natural science with pleasant recreation. Laboratory work and lectures will alternate with excursions to places of interest about the City. The fee for membership will be $2.00. Board may be obtained at from $3 to $4 a week, and arrangements will be to make all excursion trips as cheap as possible, including one fare to and from St. John to students from a distance.

The work will be of the most elementary character, specially helpful to teachers in giving instruction in the natural history subjects laid down in the course of instruction for the schools of the Province. The subjects treated, with the names of the lecturers in each, are as follows:

GEOLOGY AND MINERALOGY—Prof. L. W. Bailey, Ph. D., and G. F. Matthew, M. A.
BOTANY—G. U. Hay, Ph. B.
ZOOLOGY—John Brittain, Philip Cox, jr., B. A., and Wm. M. McLean, A.B.
CHEMISTRY—W. F. Best.
ASTRONOMY—H. C. Creed, M. A.

A full circular with outline of work, etc., will be prepared later. Those who intend to avail themselves of the privileges of the school, may send their names to Wm. J. Wilson, St. John, Secretary to Committee, or to any of the members named below:

Committee of Arrangements—G. U. Hay, Philip Cox, jr., John Brittain, H. C. Creed; W. J. Wilson, Secretary to Committee.

EDUCATIONAL OPINION.

The programme of studies for the whole school in most cases is adapted to the needs of the few who are preparing to enter the professions. This is an abuse of our educational advantages. Many of the more enlightened of our teachers see and regret the tendency, but are powerless to prevent it. This kind of instruction is in general demand and they find themselves obliged to supply it.....In my intercourse with our teachers and trustees I have endeavored to give a more practical turn to the work of our public schools. Only one in about 200 of our young people ever go beyond the common district school, and less than one in every 1,000 enter the universities. The education given in the common schools, therefore, should train the young principally for the duties of practical life. While the most favorable opportunity should be given to well-directed ambition, the schools must be conducted so as to do the greatest good to the greatest number.—*Supt. Montgomery, P. E. I.*

Instruction in elementary science needs more study and observation on the part of the teachers, and more illustration in the teaching. I trust our teachers generally will make good use of Dr. Bailey's new text-book, and the Summer School of Science, as well as the science lessons in the EDUCATIONAL REVIEW. It is also desirable that a deeper interest be taken in temperance instruction.—*Inspector I. B. Oakes.*

The general work done in all the schools as a whole, during the year, was very satisfactory, and I am satisfied that very substantial and lasting progress is yearly being made in the schools.—*Inspector Geo. Smith.*

While there is very little change in the scholastic acquirements of teachers, and even a diminution in their pay, I can honestly say that the character of their work is improving. Their anxiety to gain knowledge and improved methods of teaching, their enthusiasm in the school-room, is not to be checked by an unappreciative public. While their salaries are diminishing, they are subscribing for educational papers, attending teachers' associations, the normal school; doing everything that lies in their power to make them better teachers. They are not working merely for their salaries, but the majority are discharging what they consider a sacred trust. Not all, for there are those who scrimp their work in every walk of life, and there are teachers who say good-bye at the end of the term with their highest aspirations satisfied if they have taught the full number of days. —*Inspector E. J. Lay.*

The School of Science which held its first session at Wolfville during the summer holidays was originated by the Normal School Alumni Association, and so it may be properly regarded as one of the beneficent results of normal-school influence on educational progress in the province. The school was regarded by all who availed themselves of its advantages, or who studied its work, as a pronounced success. It certainly more than fulfilled the most sanguine expectations of its promoters, and it promises to give a decided impetus to the study of natural science on the part of our teachers.

I desire also in this place to express, on behalf of the Normal School, a very high appreciation of our new educational journal, "THE EEUCATIONAL REVIEW," which has, during the year, made so auspicious and promising a beginning. I trust that it will receive that support from the teachers of Nova Scotia, and especially from the graduates of the Normal School, which its merits deserve.—*John B. Calkin, Principal Normal School, in N. S. School Report.*

There are at present too many third-class teachers. There would not be so much objection to this if there was a general desire among them to obtain an advance of class. The schools suffer when unprogressive teachers are employed of any class. The supply of second-class male and female teachers is barely up to the demand, while there are more third-class teachers than can secure situations.—*Inspector W. S. Carter.*

Cheap elementary works of an approved character, and embracing as much variety and accuracy of information as possible in a small compass, would, I humbly conceive, be every way best adapted for our schools in their present state.—*John Macneill, Charlottetown.*

From my "Notes of Inspection," however, it will be observed that the number of schools in which these ("Lessons on Nature") were given is much greater than in any previous year, though there are still too many schools in which they are neglected. Teachers who do not possess the requisite knowledge of the subject-matter of such lessons, or of the manner of imparting instruction therein, may readily qualify themselves by the study of the text-books recommended by the Council of Public Instruction. Valuable assistance may also be obtained from the specimen lessons given from time to time in the EDUCATIONAL REVIEW, which should be in the hands of all our progressive teachers.—*Inspector R. McLellan.*

SCHOOL AND COLLEGE.

The Saint John Business College was established in 1867, and is therefore now in its 21st year. The Principal, Mr. S. Kerr, has had seventeen years of business college experience, and the fact that the last winter session was the most successful in the history of the institution, may be accepted as evidence that Mr. Kerr knows how to maintain the popularity, which, from its establishment, the college has deservedly enjoyed. New Brunswickers, being abundantly endowed with the spirit of enterprise, are to be found almost everywhere, and a very common report from the successful ones abroad is the declaration that their success may be largely attributed to the training received at the Saint John Business College. Mr. Kerr, in his advertisement in this number of the Review, calls attention to the advantages enjoyed by his college on account of the cool summer weather of Saint John.

List of graduates of the University of Dalhousie College at convocation, April 26th, 1888:

Arts, M. A.—H. H. K. Fitzpatrick, Scotstown; Robert McD. Langille, River John.

B. A.—Daniel McD. Clarke, West River; Willard Hill Fulton, Halifax; David McK. Grant, Riverton; George Miller Johnston, Upper Stewiacke; William McDonald, Pictou; Henry M. MacKay, Plainfield; W. J. McKenzie, West Bay; S. J. McLellan, Sydney; Ambrose W. McLeod, Dunstaffield, P. E. I.; John A. Matheson, L'Ardoise; Alexander McG. Morrison, Dartmouth; Thomas R. Robertson, Annapolis; David Soloan, Windsor; John S. Sutherland, St. James, New Brunswick.

Law, LL. B.—Ernest Howard Armstrong, John Roy Campbell, jr., Harry Treadway Jones, Adams Archibald McKay, Edgar Allison Magee, Charles Alexander McCready, Hector McInnes, Daniel McLennan, Auley Morrison, Charles Ernest Gregory.

PERSONAL NOTES.

Mr. W. C. Murray, B. A., the Gilchrist scholar for 1887, has won a medal and a bursary of £25 at the University of Edinburgh. He holds this bursary for two years.

One of the ablest students in Dalhousie College, Victor G. Frazee, also an editor of the Dalhousie "Gazette," wrote all his examination papers in the reformed spelling, according to the twenty-four rules recommended jointly by the Philological Societies of Great Britain and the United States. The classical professor was so far behind the Philologists of England and America in his ideas upon the subject as to demur.

G. R. Parkin, Esq., Principal of the Collegiate School, Fredericton, will spend the summer in England. He will leave early in June, and will probably be absent until October. Pleasant voyage!

Mr. A. W. Duff, of Portland, has been graduated with honors from Edinburgh University, with the degree of M. A. Mr. Duff was first in mathematics.

Inspector E. J. Lay, of Amherst, N. S., found a potato bug captured in the leaf of the Pitcher Plant (*Sarracenia purpurea*) during the first week of April last.

The Board of Governors have lately appointed to vacancies, caused by the death of members, Mr. Adam Burns, one of Halifax's most successful, wealthy and public spirited merchants, and Mr. A. H. McKay, the Principal of Pictou Academy, one of Dalhousie's most distinguished sons, and an educationist whose reputation is already continental.—*Dalhousie College Gazette.*

QUESTION DEPARTMENT.

Questions and Answers.

A correspondent asks us to re-publish the articles on "Spelling Reform" that have appeared in the "Dalhousie Gazette." We regret demands on our space are so great that we cannot find room for them.

H.—Please inform me where the "Century" is printed?

By the Century Company, Union Square, New York.

A. H. M.—Where can I get information on spelling reform?

1. Write to "Library Bureau, 32 Hawley Street, Boston, Mass., U.S.A. 2. Write to "U. S. Bureau of Education, Washington, D. C." and get circular of information, No. 7, 1880, "The Spelling Reform," 36 pages, *free.* 3. Get the quarterly "Spelling," a magazine devoted to the simplification of English orthography, the official organ of the Spelling Reform Association, "Library Bureau, 32 Hawley Street, Boston, Mass., $1.00 per annum.

M. B. H.—Is it proper to use the reformed spelling in one's correspondence; and is it necessary for one to intimate in any way that it is being used?

1. It is proper. The leading scholars in England and America are in favor of reform. 2. It is better to indicate, at present, that you are spelling according to some recognized system. Rubber stamps, marked "Reformed Spelling," (spelt according to the twenty-four rules of the Philological Societies of England and America, etc.), are used by some to stamp their correspondence.

SUBSCRIBER.—A glass tube is depressed in A, a vessel filled with water; and next in B, a vessel filled with mercury. In A the water in the tube rises above the level of the water in the vessel. In B the mercury in the tube is below the level in the vessel. Explain fully causes of phenomena.

A full explanation would require considerable space and mathematical analysis. A simple explanation may be given as follows: 1. The molecules of water attract each other as is shown by the formation of a drop. So do the molecules of mercury attract each other. 2. The surfaces of solids attract some liquid molecules, and repel others. If a drop of water be placed on clean glass it spreads over the surface, due to the attraction between the molecules forming the surface of the glass and the molecules of water. If a drop of mercury be put on the same surface it will not spread; on the other hand it will be repelled from the surface of the glass, so that its edges will tend to rise up in the form of a spherical globule. The causes of the attraction and repulsion exist in the constitution or nature of the different molecules. 3. In the experiment given, the water within the tube is attracted by the surface of the glass, and tends to spread upwards. The upper spreading edge by molecular attraction draws up a lower stratum of water after it above the ordinary level. When the bore of the tube is small, the approximation of the glass surface allows its surface attraction to act upon a proportionally less weight of liquid, so that the increase in height of the column varies inversely as the diameter of the bore. 4. As the glass surface repels mercury, the column of mercury within the tube will be lowered according to the same law. The narrower the bore the greater the depression.

E. J. L.—Your question last fall about the apple worm is answered in full in "Ferndale School"—*The Codling Moth*—of this number.

BOOK REVIEWS.

THE CONCISE IMPERIAL DICTIONARY of the English Language, by Chas. Annandale, M.A., LL.D. Toronto, J. E. Bryant & Co., Publishers. A copy of this dictionary has been received from Messrs. Bryant, the publishers in Canada. It is based on the Imperial Dictionary, and its compact size and arrangement, small though distinct type, complete vocabulary, and accuracy of definition and pronunciation, make it an admirable volume for ready reference. It condenses a great amount of matter into a moderate compass, but this condensation is not gained at the sacrifice of clearness or fulness of definition. Each page—and there are 800 in the book—is divided into three columns, forming a solid phalanx of clear, comprehensive definitions. A method is adopted of grouping a primary word and its derivatives into one paragraph, and as each word is printed in full-face type there is no loss of time in looking for the desired word. Opening the book at random we hit upon the word "Sea." After giving the derivation, and all possible meanings and references, then come certain phrases in which the word is used, as *at full sea*, etc., followed by no less than 105 compounds, such as *sea-sick*, *sea-tangle*, etc., the whole taking up about two columns and a half, and leaving nothing to be desired in the way of completeness. It is invaluable to the business man who needs conciseness, and on occasions, fulness; and its cheapness—$4.50—puts it within the reach of all.

AN ELEMENTARY GEOGRAPHY OF THE BRITISH ISLES, by Archibald Geikie, LL.D., F.R.S., Director-General of the Geological Survey of the United Kingdom. London: MacMillan & Co., New York. This small volume of 127 pages contains matter that is of great interest to the geographical student. The name of its author is a sufficient guarantee of its value. Those teachers who have read and made use of Geikie's Physical Geography know well with what an interest this distinguished author invests his subject.

ARITHMETIC FOR BEGINNERS, by Rev. J. B. Lock, M. A., Caius College, Cambridge. London: MacMillan & Co., and New York, 1888.

This is a neat little book of 200 pages, filled with a well graded selection of examples. The definitions and explanatory portions are characterized by clearness and conciseness. Interest, stocks and exchange are very nicely treated. Instead of the old rules of proportion we find the unitary method used in the solution of "proportion and compound proportion" problems. It is an English commercial elementary arithmetic, modern to Canadian eyes in every respect, except in the universal prevalence of £ *s d*. Teachers in our common schools will find it to contain a capital collection of well graded exercises for class drills in arithmetic.

COMPANION TO THE WEEKLY PROBLEM PAPERS. Intended for the use of students preparing for mathematical scholarships, and for the junior members of the Universities who are reading for mathematical honors. By the Rev. John J. Milne, M. A. London: MacMillan & Co., and New York, 1888.

This is a handsome volume of some 340 pages, got up in the usual good style of this famous publishing house. So many apparently original demonstrations and presentations of mathematical truths and methods scattered over an extensive and varied field are so concisely arranged in the treatise that it will not only be invaluable to the mathematical student and teacher who wishes to keep abreast with the progress of mathematical teaching, but a great source of delight. Its range will be best shown by a summary of its contents. 1. Theory of maximum and minimum, treated, first, algebraically; second, geometrically, to page 47. 2. Theory of envelopes, treated in like manner, to page 70. 3. "Centroid" and "force" applied to geometry, to page 78 4. Biangular co-ordinates. 5. Recent geometry, discussing antiparallels, isogonals, inverse points, the Brocard points and Brocard ellipse, the Lemoine point and triplicate ratio circle, the Brocard circle and first Brocard triangle, the Tucker circles, the Cosine and Taylor circles, Cosymmedian and co-Brocardial triangles, etc., to page 185. 6. Feuerbach's theorem, page 192. 7. Theory of inversion, and pedals, page 205. 8. Geometrical and mechanical constructions, page 212. 9. Theory of elimination, page 233. 10. Summation of series, page 233. 11. Binomial series, to page 240. 12. Algebraical and trigonometrical identities, to page 247. 13. Miscellaneous articles, to page 261. 14. Lengths of tangents and normals to a conic. 15. Some solutions. 16. Mathematical scholarship papers.

COMMON SCHOOL LAW. A digest of the provisions of common and statute law as to the relations of the teacher to the pupil, the parent, and the district, with five hundred references to legal decisions in twenty-eight different States. By C. W. Bardeen, Syracuse, New York, 1888.

This is a small volume of 120 pages—a regular *multum in parvo*. We know of no work in which the teacher can get the common law of the common school so concisely put up. We quote one paragraph, chap. ix. sec. 2. "The Schoolmaster's Castle."—The schoolhouse is the schoolmaster's castle. Upon this point the following forcible statement is fully warranted:

"This old maxim of English law (5 Rep. 92) is as applicable to the schoolmaster as to any other person who is in the lawful possession of a house. It is true that the school officers, as such, have certain rights in the schoolhouse; but the law will not allow even them to interfere with the teacher while he keeps strictly within the line of duty. Having been legally put in possession, he can hold it for the purposes and time agreed upon; and no parent, not even the Governor of the State nor the President of the United States, has any right to enter it and disturb him in the lawful performance of his duties. If persons do so enter, he should order them out; and if they do not go, on being requested to do so, he may use such force as may be necessary to eject them. And if he finds that he is unable to put them out himself, he may call on others to assist him; and if no more force is employed than is actually necessary to remove the intruder, the law will justify the teacher's act and the acts of those who assisted him." (Here follow references, "The Lawyer in the Schoolroom, 1871," page 120.)

SEA-SIDE AND WAY-SIDE is the first of a series of Nature Readers by Julia McNair Wright, and published by D. C. Heath & Co., Boston. It is intended for the use of beginners in reading. There is a delightful freshness and interest about each topic presented which cannot fail to excite the curiosity and attention of a child. To judge from the excellence of the first of the series, they would give abundant hints to parents, teachers of primary schools and kindergartners, for the instruction of young children.

BOOKS RECEIVED.

ARMY PRELIMINARY EXAMINATIONS, 1882–1887. London: MacMillan & Co., and New York.

WORDSWORTH'S PRELUDE, with notes, by A. J. George, A. M. Published by D. C. Heath & Co., Boston.

PRACTICAL LESSONS in the use of English. Books I. and II., by Mary F. Hyde. D. C. Heath & Co., publishers.

CARDINAL WOLSEY. No. 2 of the "Twelve English Statesmen" series. London; MacMillan & Co, and New York.

EXCHANGES.

The American Geologist for April contains many valuable articles, among which "Darwin and Geology," by Professor Claypole, is especially interesting. This fine monthly is published at $3 per year. One of the seven editors and proprietors is Professor Edward W. Claypole, Butchel College, Akron, Ohio, U. S. A.... *The Microscope* is an illustrated monthly costing only $1, and published at 25 Washington Avenue, Detroit, Mich, U. S. A. For the American microscopist it is by all odds the best journal for the money published anywhere.... *Science*, a weekly journal published at 47 Lafayette Place, New York, at $3.50 per annum, is indispensable to every man wishing to keep abreast of the times. It devotes considerable attention to the record of Canadian scientific work of the Natural History Survey. .... *The Argosy*, of Mount Allison, is one of the most interesting of college exchanges.... *The Colchester Sun* shows commendable enterprise in occasionally giving a short sketch and portrait of leading local men. This time it is their worthy new Mayor of Truro, Richard Craig, Esq.... *The Toronto Educational Journal* opens a scientific department under the able charge of Dr. Fessenden. This is a good sign of the times.... *Wide Awake*, for May, Messrs. D. Lothrop & Co, publishers, Boston, is a beautiful number. One feels that he has his money's worth in the illustrations of the first two pages—"Queen Louise and her Sons," and the poem and picture of the Spring Anemone.... *Popular Science Monthly* for May, published by D. Appleton & Co., New York, has many excellent articles, among which are "The Moral Influence of Climate," "The American Robin and its Congeners," "The Future of the American Indian," besides its usual full notes on literary, educational, and scientific matters.... *The Century* for May opens with the promised article on "Siberia and the Exile System," by George Kennan, which promises to be of such great interest to the student and general reader. Its other articles are, as usual, excellent, especially those on educational topics.... *St. Nicholas* for May, published by the Century Company, New York, has an interesting table of contents and illustrations. Its sketch of Girard College, "Ginseng-hunting," by John Burroughs, with other spirited and instructive articles, make up a superb number.... *The Illustrated London News* for May 5th contains a portrait of Matthew Arnold. Its sketches of scenery in lower California, in the same number, are very picturesque. The American edition of this world renowned periodical is published weekly in New York at the low price of $4 a year.... *The Puzzler* is a unique little magazine and grows more and more interesting with each number. Published by N. D. C. Hodges, New York.... *The Swiss Cross* for May is bright and interesting, and full of just such material as the youthful worker in science requires. Published by the Science Publishing Company, New York....The *Bookmart* for May, published by the Bookmart Publishing Company, Pittsburg, has been received. It has an interesting table of contents.... *The Scientific American*, published by Munn & Co., New York, in its issue of May 5th illustrates a simple and practical method for teaching geography.... *Forest and Garden*, published in New York, increases in interest with every number.

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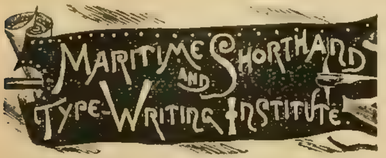
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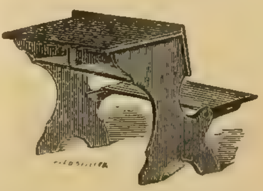

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PRESS NOTICES.

A weekly journal of the highest character. . . Will unquestionably rank with the most comprehensive and valuable periodicals of the kind now published.—GEORGE WILLIAM CURTIS, in the "Easy Chair" in *Harper's Magazine* for March.

Takes instant rank as the leading journal of horticulture, landscape art and forestry published in the country.—*Philadelphia Press.*

The field of the new periodical is by no means a narrow one, and includes whatever attracts readers interested in either of the subjects embraced in its double title, from the professed botanist to the suburban resident who wishes to embellish a modest bit of lawn. . . It is an unusually handsome paper.—*N. Y. Times.*

It is the ablest and most attractive paper of its kind that ever appeared in the United States.—*Troy Telegram.*

GARDEN AND FOREST is remarkable for the rare excellence of its illustrations. . . The drawings of flowers in each number are admirable, and the landscape views are a surprise in their delicacy of finish.—*Buffalo Courier.*

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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A. H. MacKAY, B. A., B. Sc., Editor for Nova Scotia. ALEX. ANDERSON, LL.D., Editor for P. E. Island. G. U. HAY, Ph. B., Editor for New Brunswick.

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EDITORIAL NOTES.

IN commencing the second volume of the REVIEW, the support that has been received during the past year encourages us to hope to make it still more valuable in future as an educational journal. Since our last, many in renewing their subscriptions for the ensuing year, have spoken in such terms of the REVIEW as to warrant us in believing that it has afforded them valuable assistance in their work. A larger issue of the REVIEW than usual is sent out this month, and we hope that those who may perhaps see it for the first time will determine not to be without it.

THE anniversary exercises of Acadia College are ending as we go to press. This is the fiftieth anniversary of its foundation and its friends are preparing to celebrate the event by a grand rally in August next and the foundation of a jubilee fund for the better equipment of the college. The year is appropriate, as it has been one of marked progress and success at Acadia.

THE programme of the Interprovincial Convention, to be held in St. John in July, is published in full in another column. Among those who have accepted the invitation to be present, are Sir Wm. Dawson, Dr. J. C. Fitch, the educational author whose works have such a wide popularity here, Col. Francis W. Parker and Mrs. Parker, of Illinois, Dr. Th. H. Rand, Dr. Schurman, of Cornell University, and leading educationists throughout these Provinces. Some of the men whose names are given above have a world-wide reputation as teachers, and no one should miss an opportunity, that may not soon occur again, of hearing them.

"THE nursery and orchard of Franklin Sharp, jr., just at the town boundary, is growing under his skill and unremitting industry to be one of the finest agricultural aspects in this fair country. When Mr. Sharp commenced work on that land a large part of the ground was rough and untilled. To-day the thousands and thousands of trees set in rows as straight as a line; the ground drained, leveled and thoroughly cultivated; busy men and boys extending and improving the plantation, is a sight to make one feel that our boys are not devoid of enterprise and energy. The young proprietor of this prospering enterprise is to be congratulated and given credit for his pluck in going forward, under very serious drawbacks, in the heavy work in hand."—*Woodstock Press.*

The above is an illustration of what may be accomplished by intelligence and energy. There are hundreds of acres in these provinces that are awaiting just such treatment to yield the results above mentioned. The REVIEW in both the last and the present number is aiding in this work by showing how to preserve orchards from the ravages of insects.

IN connection with the "Drawing" in our common school course, great practical benefits can be secured by drilling the pupil in the use of the scales for the plotting of simple plans and the construction of angles. First, the labor would not be great, and the results would be as valuable in the training of the hand as an exclusive attention to freehand work. Secondly, the pupil leaving the common school for the avocations of life would have a knowledge which would be of practical use to him in understanding plans, maps, etc., and in the construction of plans. Thirdly, it would constitute the best preparation for study of geometrical mathematics in the high school, should he go on, and for the workshop mathematics, should he have to leave at the common school stage, as the great majority must do. The plotting of simple plans according to scale can be made an interesting lesson to very young pupils. Begin with the outlines of the school-room.

AT THE late meeting of the Royal Society at Ottawa the president, Dr. Lawson, delivered an address reviewing the year's work. Among the many papers submitted and read were the following: On the Nymphæacæ, by Prof. Lawson. Revision of the Canadian equiseta, by the same. Notes on Nova Scotia gold mines, by E. Gilpin, jr., M. A., F. G. S. On Hamalanotus Dawsoni, by Rev. D. Honeyman, D. C. L. On Serpulites longissimus, by the same. The Giant Trilobite of Moose River, Asaphus (?) Ditmarsiæ, Hnym, by the same. A table of the Cubical Expansion of Solids, by J. G. MacGregor, M. A., D. Sc. On some Remarkable Organisms of the Siberian and lower Devonian rocks of Acadia, by G. F. Matthew, M. A.

The following new fellows were elected: In section I., Abbe Cuoq. In section III., Professor Bovey, of McGill College. Section IV., A. H. MacKay, B. Sc., Pictou, N. S.; Abbe Provencher, Portneuf, Quebec.

THE following extract from a paper read by Miss Gillmor, of the Milltown High School, on Arbor Day contains a truth that should never be lost sight of. The influence in after life upon the child whose surroundings have the elements of beauty and order cannot be overestimated:

> "The little world in which children spend the most impressionable season of their lives should be fresh, bright, clean, and attractive, for like children of a larger growth, they are influenced by their surroundings. A little cost and care, on the part of parents and teachers, can make a school and its environments one of the bright spots of earth. Give us shaded, orderly grounds without, and within a home-like room brightened with plants and flowers, which are themselves neither sweeter nor brighter than the flower faces of little children—give us these, with your sympathy and co-operation, and we will give you back the material of which men and women are made."

THE Experimental Farms of Canada, under the management of the director, Professor Saunders, must eventually prove of very great value to the agriculture of the Dominion. James Fletcher, the Entomologist, has in "Bulletin 3", shown his skill in Botany by a scientific and at the same time most popular exposition of the cause of the "Smuts affecting Wheat," and the method of preventing them.

"A QUARTER of a century ago, a proposition was made by the teachers of Nova Scotia to start an educational journal. Over the meeting at which the proposition was made the Rev. Dr. Forrester presided, the man to whom Nova Scotia may indeed be grateful for the impress which his life work left upon the educational institutions. The journal was started, to be followed in time by many others; and yet it seems strange that notwithstanding the literary activity which has prevailed among the teachers of the lower provinces in support of such educational periodicals, no extended life has ever appeared of the "father of free schools" in Nova Scotia. Is there not something ungrateful in this neglect on the part of those who first drew inspiration from the Stowe of the Maritime Provinces."—*Educational Record, Quebec.*

This remark is to the point. Why should it be so? A short sketch of the life of Dr. Forrester, the "father of free schools in Nova Scotia" has been prepared for the REVIEW, and will in due time appear.

THE success which has attended the establishment of the branch of the Berlitz schools of language in St. John and Fredericton, must be gratifying to the Professors Ingres and Bober and a proof of the excellence of their system. The classes both in St. John and Fredericton have grown so rapidly that the school, it is hoped, may have a permanent establishment here.

IT HAS been decided to abandon the N. B. Summer School of Science for this season, the required number of students not having enrolled.

SEVERAL candidates for matriculation into N. B. University from the young ladies' High School, St. John, are undergoing examination. Four candidates from the same school have completed their examination for the degree of Associate in Arts in McGill University, Montreal. This speaks well for higher education, and especially for the character of the work done in this school by the accomplished principal, Mrs. Carr, and her staff.

IN the *Bookmart* of Pittsburg, Pa., which comes to us for June, enlarged and greatly improved, is a translation of an exceedingly rare copy of verses on the Defeat of the Spanish Armada, which took place in June, 1588,—three hundred years ago.

ANOTHER compliment to a Canadian scholar is the conferring knighthood on Dr. Wilson, of Toronto University. It is said that he declines to accept the proffered honor.

Back numbers of the REVIEW, from August to April, inclusive, will be paid for in cash if returned to this office.

ARBOR DAY.

From reports received from different parts of New Brunswick, Arbor Day seems to have been observed very generally. The success which attended the experiment last year of setting aside a certain day for planting trees and otherwise improving school grounds induced the Board of Education to make permanent provision for the observance of the day. We are glad that the response to the order has been so general. In addition to the tree planting the school exercises appear to have been practical and appropriate, and the interest seems to have extended beyond the school grounds.

One hundred and fifty trees were planted on the High School grounds, Milltown, by Principal N. W. Brown and his assistants. Mr. Brown's success in previous years in transforming the school grounds at Forest City, York County, into a garden is an example worthy of imitation in other districts.

From reports in the papers, throughout Nova Scotia Arbor Day appears to have been observed very generally, although the day selected in some districts, the 29th of May, was rather late for successful planting.

THE NEW BRUNSWICK UNIVERSITY.

Encœnia at New Brunswick University will take place on Thursday, June 21st. Judge King will be the Alumni orator, and Prof. Dyde will give the annual oration in praise of the founders.

From the Calendar which has just been issued it is gratifying to learn that this institution has had a more than usually prosperous year. There has been an attendance of sixty-one students in the regular classes with thirteen pursuing a partial course. This is an increase on previous years, but there is still much to be desired in this respect. The additions that have been made to its faculty of instructors, the raising of the standard of instruction, and the improvement of the course in lengthening it and otherwise increasing its efficiency, should be the means of bringing within its walls still larger accessions of students and of stimulating its graduates to put forth greater efforts to add to its endowments.

In the proposal to found a scholarship in memory of its late president, Dr. Jack, the public spirit and liberality of its graduates should cause them to respond so quickly, that the enthusiasm of giving to an institution to which New Brunswick owes so much would prove infectious. Is it not time that the public pulse in New Brunswick was quickened into giving more liberally for the support of higher education? How little has been done in the past fifty years to add to the university scholarships or to increase its endowments; to add to its faculty of instructors, or to increase their emoluments! Did the spirit of noble giving and effort end with those who established the institution, and has a grateful posterity no ambition to add *its* testimony to the donations of nearly a century ago? Perhaps those who listen to the oration in praise of its founders on the 21st will be animated by a zeal to present good gifts.

LIVING SALARIES.

If the teaching profession is really to be a profession it must hold out better inducements in the shape of salary. The laborer is worthy of his hire. And if his hire is not sufficient to support a family, he must make a stepping-stone of the present labor for a more remunerative one. This knight-errantry which utilizes the educational field in our country for temporary personal advantage, is the bane of our present system; such is the testimony of every one of our inspectors. A prospective literary professional class gives the elements of literary knowledge to our young people in too often a very perfunctory manner. And when the work is enthusiastically done, as it often is, the young pupils have sometimes no other aspirations developed than to go to college, or to be a minister, lawyer or doctor. But what the country needs most, is the enthusiastic direction of our young people to the development of agriculture, the arts and manufactures, and whatever latent industrial resources may exist in the country, not forgetting the literary professions either. The teacher must be an all-round man himself to do this work. But such a genius with such a training costs something to produce; and its value to the country is something that is not likely to be estimated by persons whose ideas do not rise above the quotations of the market in their own line of production. The lowest priced teacher is engaged. The useful one is starved often into another profession. When our teachers ask what can be done to increase salaries, it is not necessarily a cry of selfishness. It is more often the expression of those whose hearts are wholly in the work of education, and who are loth to leave so useful a field in the care of hirelings. But the magic of genius is not the power of living upon nothing. It is rather the faculty of finding something to live upon. The educational genius must therefore too often turn from the pursuit of his cherished purpose, and take his place in another profession. Surely it is not too much to hope for that some scheme may be devised to make evident to all concerned the advantage of a more enlightened and liberal policy in educational matters. The first movement must come from our teachers by demonstrating the practical value of worthy educators.

PERMANENCY.

In looking over the reports of education for New Brunswick and Nova Scotia it is a matter of regret to observe the frequent change of teachers, the short space of time that they are employed in a district, and the general unrest that seems to be characteristic of the teaching profession. No matter how well fitted teachers may be by previous training and scholarship for imparting instruction,—no matter what special gifts they may have for moulding the mind and forming the character, the consciousness that they are soon to engage in other pursuits must act as a clog on their efforts and prevent that development of their powers which increasing knowledge and a riper experience are sure to bring.

This element of permanency is one which should be fostered—by governments, by communities, and especially by those upon whom is placed the responsibility of administering our education. A government that fosters education by a wise and liberal policy is laying the foundation of a lasting prosperity. Institutions, as normal schools, that fit teachers for their work, higher institutions of learning, especially those that stimulate the industrial activities of a people, should be so thoroughly equipped and maintained as to make their influence felt in all departments of life. It may be necessary to practice rigid economy, but an economy that cripples education is unwise.

Many communities have yet to learn that the cheapest teachers are the most expensive in the end. The least reflecting person must realize that to intrust the education of his children to an inefficient teacher is a poor way to economize. If he must stint he should do it in some other direction. But the time must soon come when to pay trained and capable teachers a living salary as one means to ensure permanency will be looked upon as a wise and judicious investment by those who employ educated labor.

But if a government supports normal schools in which to fit teachers for their work it should have the assurance of at least some degree of permanency on the part of the pupil-teachers who are graduated therefrom. In Newfoundland there is one excellent feature in the school system, and it is that teachers who receive normal school advantages have to guarantee to teach for a stated period. If normal schools are called upon to do less academic and high school work and more training orprofessional work, it certainly seems but a measure of justice to the country that it should receive the benefit, by requiring their graduates to remain longer in the profession. A correspondent in our last put this matter very forcibly, and it is worthy of consideration.

MOUNT ALLISON INSTITUTIONS.

The academic year has just closed at Mt. Allison. From the reports to hand the past year has been one of more than ordinary progress and success. These Educational Institutions, though under the control of the Methodist church, are not conducted in sectarian grooves. All denominations and classes throughout the Provinces patronize them, and so generally has this been the case that scores of old students are found in all departments of professional, mercantile and manufacturing employments. The great success that has crowned the efforts of Mt. Allison during the past year may be regarded as an indication of increased interest in the higher education all along the line. The attendance at the University during the year has been 95; at the Ladies' College, 145; and at the Academy, 57. These figures indicate that the stimulus of intellectual quickening and culture has been brought to bear upon nearly 300 youths of our country in these institutions during the past year.

The closing exercises were of a very interesting and pleasing character. These are among the strong points in favor of Mt. Allison. The students show to the public what they are capable of doing and the character of the instruction during the year. Principal Davis was able to report a larger attendance in the Academy than the year previous, but the attendance is by no means what it might be or what its friends hope for. The high state of the public school system of the Provinces has, no doubt, affected the attendance at the old Academy. The Ladies' College is in a highly flourishing condition. Principal Borden and his fellow instructors may well feel proud of the success which has attended their efforts. Music, Fine Arts and Modern Languages are taught by instructors of the very highest attainments, and then all the advantages of the University classes are thrown open to the young ladies. The attendance is so large and the applications for rooms so pressing that a further enlargement of the building has become a necessity. To meet the growing demand for musical culture in all its branches, a movement is on foot to erect a new building to be known as the Conservatory of Music.

We are glad to note that the graduating class this year is the largest that has yet gone forth from the University. Another pleasing feature in connection with this class is that two of its members were young ladies. Mt. Allison has the distinguished honor of being the first College in Canada to throw open its doors to women, and also the first to confer the regular B. A. and M. A. degree upon the other sex.

The University at Sackville is fortunate in having such an accomplished scholar and fine executive officer for its President as Dr. Inch. He is ably assisted by a staff of enthusiastic professors. The Chair of Literature organized last year has been satisfactorily filled by Prof. Tweedie. It is a hopeful sign for our country when our young men who have earned distinction in the Universities of Great Britain and Germany return to assist in the development of the higher education. Prof. Smith has been the recipient of the degree of LL. D., from Victoria University, and Prof. Burwash has just received that of D. Sc., from Mt. Allison. We congratulate both of these gentlemen on their well earned honors. Dr. Burwash has long been held in high esteem for his attainments in natural science.

A great improvement has been made in Lingley Hall. The rooms at the front entrance have been thrown into the auditorium which is now capable of seating fully two hundred more than formerly. We are glad to notice these signs of improvement and progress at Sackville. These Institutions have done and are doing a noble educational work in our midst, and they are at this moment better equipped to continue that work than ever before.

The exercises just closed must have rejoiced the heart of the venerable Dr. Pickard, who was present. He was the first Principal of the Academy and the first President of the College. He spent nearly thirty years of his active, busy life in working for the cause of education and the welfare of the Sackville Institutions. It will soon be fifty years since the Academy was first started. From that beginning have grown, by a regular process of development, the Ladies' College and the University, with all their appliances and equipments; and taken altogether there is no more complete educational centre in Canada. The friends of Mt. Allison will soon, therefore, celebrate the Jubilee year of the organization of their educational work. When that celebration takes place, there could be no more graceful, no more deserving act than that of founding a chair or other endowment and associating with it the name of HUMPHREY PICKARD.

SECONDARY EDUCATION IN ENGLAND.

The friends of National Education in England have cause to be satisfied with the work of the last twenty years. Primary education has advanced by "leaps and bounds." The sections of the community that in former times were reached by the inadequate means at the command of the various organizations which dispensed the benefits of education to the country have for years been enjoying advantages, which twenty or twenty-five years ago could only be secured by their richer neighbors. While those who were removed from all educative influences, except those which debased their nature and prepared them for a career of crime, have, by the compulsory clauses of the Education Act, and the earnest, enthusiastic and intelligent efforts of School Boards and educationists, had opened to them opportunities to lead honest, useful and industrious lives. The statistics of crime prove unquestionably that, during these years, coincident with a vast increase in the number of schools and the pupils attending them, there has been a great diminution in the number of juvenile delinquents. Reports of school boards, of committees who have inquired into the social, moral, and economical effects of recent educational operations, and of commissions appointed by Government to prosecute similar investigations, but of a wider scope, concur in recognizing the undoubted evidence of a salutary change in the condition of the people, and of brighter hopes and fairer prospects for the future.

But if we extend the region of our observation beyond that in which primary education is operative, we are not rewarded by the same gratifying results. Between the primary school and the college and the University no well organized system of intermediate schools has been interposed. There are the great public schools, the grammar schools and private and proprietory schools, but there is no inspection, no registration, and no responsibility to the public. Mr. John Morley in a recent speech on this subject said: "Every person who watches secondary education is too familiar with the confusion of wasted and misapplied endowments, distracted trustees, and bewildered parents—a very Babel of abounding conflict and misdirected criticism." The colleges and universities complain of the state of unpreparedness in which lads enter their classes. It is true that an excellent intermediate education can be had, but then it is beyond the reach of any except the wealthy. All the education that is good is intolerably expensive, while that which can be obtained at a moderate fee is excessively bad. The late Mr. Matthew Arnold says: "The English middle classes are among the worst educated in the world. Their education is vulgar and unsound. Our body of secondary schools is the most imperfect and unserviceable in civilized Europe, while our middle class is the worst schooled." And this condition of matters is not the result of apathy, or the absence of any strong desire for reform. Discussions of this question on public platforms, denunciations from educational enthusiasts, and articles by leading educationists in the most influential magazines, have led to the appointment of commissions and committees by Parliament and the preparation of voluminous reports. But everywhere these efforts are hampered or directly opposed by the three obstacles which must always be overcome by those who enter the field of educational reform—"vested interests, local prejudices and stupid obscurantism."

It must also be mentioned to their credit that the universities, by means of local examinations, have sought to influence the secondary education of the country, and not without good results. Many excellent schools have been, by the success of their pupils at these examinations and those of the College of Preceptors, brought into public notice and have had their credit established as sound and reliable places of learning. And at the same time there has been demonstrated to the public the fact that judicious examination is not only of advantage to their interests, but that it cannot fail to bring fame to and increase the income of the schools. But educational reformers, though satisfied with these as experiments, are by no means content to rest here. They behold, with dismay, that every new experiment, however successful, only adds to the chaos that formerly existed. They feel confident that from the £660,000 stg., of annual income, devoted by endowment to secondary education, there ought to be derived education of better quality and of greater quantity, and that three or four times the number of pupils ought to participate in it. And they are convinced that the spasmodic efforts of the teachers of the higher departments in primary schools, the private adventures of enterprising teachers, and the combined efforts of the wealthy in certain localities to establish proprietory schools, cannot supply the deficiency. And, therefore, during the last few years, constant, untiring and enlightened efforts have been put forth to educate public opinion on this great question, and to keep up a constant pressure in the direction of reform. Doubtless the debate in the House of Commons on 27th April brought gladness to the hearts of many. Its whole tenor was a pledge from both sides of the House that both parties were resolved that the present state of things must not continue any longer, and emphasized the admission that they were responsible to the public for the efficiency of secondary as well as primary education. And the least sanguine are justified in hoping that a resolute effort will be made, by the appointment of well qualified inspectors, to bring order out of the existing confusion, and by the power to be granted under the proposed "Local Government Bill," to utilize, to the utmost extent, local efforts and local capabilities to satisfy the demands of secondary education.

Such an admission on the part of English statesmen of their obligation to provide for the higher education of the youth of the country is a very hopeful feature of the politics of the day. It has long been acknowledged in Germany as the duty of the state to see that education, from the primary school to the university, is as perfect as it can be made. Germans are always ready to express their opinion that what they are at the present day, in the arts, or in war, is most of all attributable to their admirable educational advantages. In Germany the state inspects the primary schools, but reserves its grants for the higher education. Mr. Matthew Arnold writes: "We are misled if we are merely told that the schools for the lower classes in Berlin are free, while those for the middle and upper classes charge school fees. What would the schools for those classes be in Berlin, or anywhere else in Germany if they had merely the school fees to depend upon? The schools are built and maintained, and their teachers are paid by the state or the municipality; the school fees of the pupils, always very moderate according to their notions, are merely a contribution in aid of the expense of admirable schools provided really like the elementary schools by the public." Such being the case, need there be any fear of following in the footsteps of the Germans. A generous and intelligent support of the higher education will serve to develop, foster, and exalt the professional spirit of the teachers, and quicken and stimulate the intellectual energies, and strengthen the moral force of the pupils.

THE PLANETS FOR JUNE.

Jupiter shines with great splendor in Scorpio. It is slowly moving westward from Beta Scorpii, with which in May it was nearly in apparent contact. After night-fall it will be the most conspicuous object in the southern sky.

Mars is further west in Virgo, but is moving eastward among the stars. It was in conjunction with *Uranus* on the 6th inst.

Saturn is still further west, east of Pollux and Procyon, in Cancer. It is moving eastward, and during the month will pass Præsepe, the nebulous cluster, also called the Beehive.

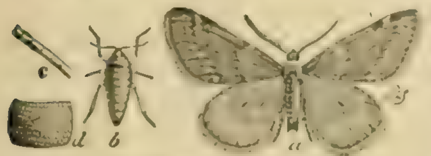
Venus is morning star in Taurus with Neptune.

Mercury is in greatest eastern elongation from the sun on the 12th, when it sets about two hours after the sun. It is then in Gemini and forms a triangle with Procyon and Pollux.

FERNDALE SCHOOL.

No. XIII.—The Canker Worms.

1. *Anisopteryx pometaria*, Harris, (Fall Canker Worm)
2. *Anisopteryx vernata*, (Peck), (Spring Canker Worm).

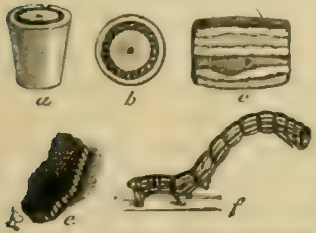


Fall Canker-Worm (*Imago*).

a. Moth (Male); b. Moth (Female); c. Portion of Antenna Magnified; d. Segment of Body Magnified.

Teacher. Here is another of the great enemies of our apple trees. When was this delicate, brownish grey, nearly transparent winged, moth captured?

Jack. On a fine day last November. After the first frosts are over in the fall, they come out of their cocoons in the ground in great numbers. The female ones, without wings, looking like a kind of grey bug or spider less than half an inch long, were caught climbing up the apple trees and laying pretty patches of small eggs on some of the twigs.



Fall Canker-Worm, (*Eggs and larva*).

Teacher. Very good. Here we have one of these patches figured at *e*, and the separate eggs magnified at *a* (side view) and *b* (top view). When do these eggs become hatched?

S. In May just when the buds of the trees break out into leaf, and the larvæ keep eating at the leaves until they grow about an inch long before the end of June.

T. There is a drawing of one at *f* with one of its segments magnified at *c*. What habits have you noticed?

S. They sometimes stand out straight in the air.

Another S. There are no feet on the middle of their bodies, and they loop when crawling.

Other S. They call them loopers . . . measuring worms . . . yardstick caterpillars, because they crawl on as if they were measuring. If you shake the tree they fall off and remain hanging on fine silk threads like spiders' webs.

T. Correct. And about the end of June when full grown they reach the earth, go down into it from two to six inches, weave a buff-colored cocoon of silk and change into chrysalids. The pupa comes out of this after the first autumn frosts, as the perfect moth, male or female, as we have seen. To what order of insects does the Canker-worm belong?

S. To the lepidoptera.

T. To which division of the lepidoptera—the butterflies, sphinges or moths?

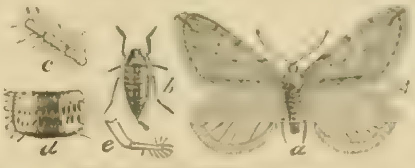
S. To the moths.

T. Geometry is the science which enabled people first to measure the earth. Hence the moths whose larvæ are so constructed that they loop when moving about as if they were measuring everything, are put in a class by themselves called the *geometrid* moths.

S. Does the other Canker-worm — the *Spring* one—belong to the geometrids.

T. Yes. It was once thought to be only a variety of the *Fall* Canker-worm, the only great difference in its habit being that it generally remains in its cocoon all winter until the first warm days in spring, when it comes out to deposit its eggs as the other species did in the fall.

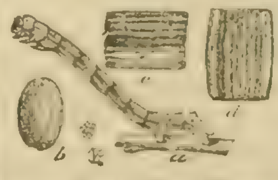
Jack. But it is different in all its stages from the *fall* species—not very much, but quite enough to be very distinct.



Spring Canker Worm (*Imago*).

T. Very good, Jack; let us just compare the two species. Here is the male moth at *a*; the female at *b* with its ovipositor, or egg placer, (which the other species has not), magnified at *e*. A segment of its body is magnified at *d* and shews two rows of minute reddish spines on it. A portion of its antenna is shown magnified at *c*.

S. Are its eggs laid like those of the Fall Canker-worm.



Spring Canker-Worm (*Eggs and Larva*).

T. No, not so regularly, generally in small masses in the crevices of the bark as shown of natural size and with one egg magnified here at *b*. The egg is different in shape also; as are the markings on the body of the caterpillar. *c* is a magnified side view of one of its segments, and *d* a back view. The young caterpillar is of a dark olive green or brown with a black shining head, and a black plate on the next segment. They are very variable in the color of the bands, stripes, and mottlings when older. As they become very numerous under favorable circumstances and strip whole orchards of their leaves before the end of June when they enter the ground, let us find out how we can prevent their depredations.

Jack. As the females have no wings they cannot place any eggs on the trees unless they walk up from the ground along their trunks. I have seen people tie broad bands of paper with tar or some sticky substance around the tree trunks in October to catch the Fall species, and about April to catch the Spring species. The wingless females walk up to the band, and if there is no way to get over or under it they either get stuck in the sticky substance on the band, or never get up the tree.

T. Very good. The tar must be kept soft and sticky by mixing with oil; and the bands must fill the crevices of the bark or else the small caterpillars hatched from eggs at the root of the trees might get up to the foliage. But spraying with the Paris Green water recommended for the Codling Moth in our last lesson (one ounce to about fifteen gallons of water) is sure death to the young caterpillars. When should the spraying be done?

S. When the eggs commence to hatch.

T. When is that?

S. When the buds commence to open.

T. Very good. Spray the trees for the Canker-worm in May just before the buds open. Then again in June, just as the petals have fallen from the flower. Then the two great enemies of our apple trees, the Canker-Worms and the Codling Moth, can have but little chance for life or for mischief doing.

FERNDALE NOTES.

No. IV.—The First Map.

Side of the school-room in the direction of the rising Sun—East. Opposite side—West. Face the Sun at noonday—South. Opposite—North. People agree to have the North at the top of a map. Let us make a map or plan of the school-room—that is, a drawing to show just what the room is like.

Here is a foot rule. Measure the North end of the room. How many feet? It measures 30 feet. Can I draw a line this long on the board? No. How long? Thirty inches. Well, we draw a straight horizontal line, and make it 30 inches.

Now, Jessie, you measure the East side of the room. How many feet? Thirty-two. How does the East side join the North side? Look down at the floor. It makes a square corner. Well, we shall draw a line from the end of the one on the board making a square corner. Is that like it? Yes. But from which end should I draw it? We don't know. Well, face the North end. At which hand is the East? At the right. Well, face the line drawn for the north end on the board. From which end should we draw the line for the East side? From the right-hand end. Very good, from the right-hand end we shall draw it. And how long? Thirty-two inches.

Now, Lena, will you measure the West end? Can anyone tell how long she will find it to be? Yes, 32 feet. How do you know? It appears the same length. It would have to be the same length or the room wouldn't look square at the corners. Lena says you are right. We shall draw it like the other side.

Who will measure the South end? We needn't. It must be the same as the North end? Must it? Go and try. Yes, thirty feet. What kind of corner shall we make? Square. Drawn, but not at right angles and does not meet the end of the other side. Oh, it is not a square corner. Why? Because it would meet the other end. Why? The South end of the room meets the two ends. Very good.

Measure the platform. Six feet wide and all across the room. How far from the North line shall I draw it? Six inches.

How far are the seats from the wall and platform? Measure. Three feet from the wall and four from the platform. How far from the lines in our drawing shall I make them? Three inches, and four inches.

Complete in like manner. Mark cardinal points on the plan of school-room. What direction is teacher's desk from such a desk? In which seat is four sitting ? John, please walk round the passages through which I am drawing this dotted line.

This is a plan of the school-room. If the trustees somewhere else wished to build a school-room like this, would this plan show them how to do it? Yes, if they knew how much an inch meant. How much? One foot. But could not the same thing be shown without so large a drawing ? Yes, make half an inch stand for a foot. Couldn't it be made still smaller? Yes, a quarter of an inch for a foot. Which drawing would be on a large scale? The first. Which on the smallest scale? The last. What is the scale? I don't know. Well, in the first it is *one* inch to the foot. You can now tell me the scale of the others. A half an inch to the foot, and a quarter of an inch to the foot. Correct. If we wish to draw a map or plan of the school grounds, what must we first do? Measure it. Well, you shall do so, and I shall draw the plan for you on the board, according to your measurements. But will the board be big enough? Yes, if we draw it on a smaller scale than the school-room.

We learn from the London *Schoolmaster* that the introduction of shorthand into Rugby School, England, has proved a great success. There are nearly one hundred boys in the shorthand class, and all of them are most attentive and eager to learn. Dr. Percival, the head master, says "the boys are delighted with the lessons," and he thinks that shorthand will become a very popular subject among them.

PRACTICAL BOTANY.

No. IV—Movement in Plants.

Very few subjects of study present more opportunities, in the hands of skilful teachers, for training the observing powers of pupils, than the structure and habits of plants. In the preceding papers on this subject it has been shown how this can be done, in a measure, without the aid of text-books, by encouraging pupils to cultivate plants in order to watch their growth from the seeds; to learn the names of plant parts by taking those of the simplest structure and leading the pupils to observe the arrangement and purpose of each; to make drawings of the plant and its parts, and be able to describe what they see with as little aid from the teacher as possible. There will be a strong temptation to *tell* pupils what they should find out for themselves, but this should not be yielded to. Proceeding slowly and with patience, and connecting each day's work with what has been done before, progress will soon be rapid, if the teacher has been careful to let the pupils depend largely on their own resources at the outset. A good beginning will thus be made for systematic study of plants later on—and in any case the pupil will be trained to observe what is about him.

Plants have many curious habits, which is a source of never-ending interest to observe. That some of them have the power of motion in certain parts, to a limited extent, is quite evident if we watch them carefully. Notice how young seedlings, growing near a window, will bend instinctively toward the light. Climbing plants, whether upon walls or woody supports, show the same tendency to expose as large a surface as possible to the light. Such climbers, when they have reached the top of their support, will sweep round in a circle as if instinctively seeking another prop, to which, if not too far off, they will become attached. To illustrate this, let a Hop or Morning Glory be allowed to overtop a short support. Place near it, at the distance of a foot or so, a longer pole, around which, if rapidly growing, it will soon twine.

Some plants climb by their stems, others by their leaves, others by tendrils (thread-like shoots). Ask the pupils to observe climbing plants, and bring examples illustrating the different methods.

Some plants are very susceptible to changes of the atmosphere. The little Wood-sorrel (*Oxalis acetosella*) which is so abundant in the woods in early summer, and several species of clover, especially White Clover, close their leaflets at nightfall, thus exposing the least surface to be cooled by radiation. Under the influence of light and warmth, however, this position is exchanged for one which gives the greatest exposure. This folding up of the leaves at nightfall was fancifully termed the "sleep of plants" by Linnæus. Many flowers of the compositæ, such as the Dandelion and Sow-thistle (*Sonchus arvensis*) close at nightfall or before a rain. The Evening Primrose (*Ænothera biennis*) closes its flowers in the morning and opens them at sunset. These are only a few of the plants whose leaves or flowers open or shut at stated intervals. Ask the pupils to observe others, and in this way new facts may be brought to light.

Another remarkable evidence of the power of motion in plants is furnished in the Round-leaved Sundew (*Drosera rotundifolia*) which grows abundantly in damp places. At this season of the year it will be observed in the form of a cluster of reddish leaves growing close to the ground. Later on in the summer it will send up a stalk or scape bearing the flowers. Each leaf is thickly covered with small spines. At the end of a spine glistens a minute drop of moisture which shines brilliantly in the sun, giving rise to the popular name of the plant. But on placing the finger upon these drops, it is found to be composed of a sticky or glutinous substance. Small insects alighting upon the leaves become entrapped, and the more they struggle to escape the deeper they become entangled on the treacherous surface. The leaf gradually but surely folds in from both sides upon its victim, worn out with the unequal struggle, and gradually entombs it after some hours. After a day or two the leaf re-opens, but the insect has disappeared, and the leaf is ready to make another meal of the first unwary small insect that may be attracted to its leaf. This phenomenon of a plant that derives a part of its sustenance, at least, from insects may be observed by anyone. Search out the plant. It is very common and easily recognized from the description given above. Dig it with a sufficient supply of earth to ensure its life for some weeks, and place it in a sunny window. Place a mosquito, or a particle of fresh beef about the size of a pin head, upon the open leaf and await the result. In the course of several hours the leaf will have enclosed the particle. When it again unfolds the object will be found to have disappeared - in other words to have been absorbed or digested by the juices of the leaf.

The Pitcher-plant (*Sarracenia purpurea*), which is abundant in swamps, is another insect catcher, although not in the same way as the Sun-dew. In these pitchers water is generally found, in which may be seen drowned insects in all stages of decay. What use, if any, these dead insects are to the plant has not yet been made clear, and yet plants rooted in bogs scarcely need to store up water in pitchers for their own use. Is it simply a trap to drown useless or unwary insects?

THEODORE HARDING RAND, A. M., D. C. L.
(President of Woodstock College, Ont.)

In the past quarter of a century there has been no man who has exerted a greater influence in educational affairs in Nova Scotia and New Brunswick than Theodore H. Rand. He successively filled the important positions of Chief Superintendent of Education both for Nova Scotia and New Brunswick at times when clear judgment, wise forethought and a fixedness of purpose were necessary to organize systems of education of which we are justly proud.

Dr. Rand was born at Canard, Cornwallis, N. S., Feb. 3rd, 1835. He was educated at Horton Collegiate Academy and Acadia College, and was graduated from the latter institution in 1860, in a class the most brilliant that has passed from the walls of that honored institution of learning. Among the fellow students of Dr. Rand were the late Prof. Chas. Fred Hartt, Prof. Jones, Dr. Alward, Dr. Wickwire, and others, who have won distinction.

In 1860, Dr. Rand was appointed to the chair of English and Classics in the N. S. Normal School, Truro, and in 1864 he was called to fill the position of Chief Superintendent of Education for the Province, from which office he was removed in 1870. In 1871 he was called by the Government of New Brunswick to be Superintendent of Education on the inception of the new school law for the province. This position he held until 1883 when he resigned to enter upon his duties as Professor of the Theory and Practice of Education at Acadia College. His work was regarded as most successful in the college, and when he left to fill the chair of Christian Ethics and Didactics in McMaster Hall, Toronto, it was with universal regret.

Dr. Rand's force of character and genius for organization secured him a warm friend and patron in the late Senator McMaster. He was called to the Principalship of Woodstock College, which, aided by endowments from a princely giver, and stimulated by an intelligent and vigorous leader, soon gave promise of the larger institution into which both Toronto Baptist College and Woodstock College have been incorporated—McMASTER UNIVERSITY.

Dr. Rand was chairman of the committee to secure the charter for this University, and chiefly to his tact and energy, and the princely generosity of him in whose honor it is named and who bequeathed nearly a million dollars as an endowment, McMaster University owes its foundation.

Dr. Rand has qualities which distinguish him as a teacher and a leader. In both Nova Scotia and New Brunswick, as Superintendent of Education, he did not flinch in the discharge of duties that required tact and determination. In the equipment of a system of free school education it was but natural that Dr. Rand should be subjected to much hostile criticism, but the character of his work and its results will become more apparent with the lapse of time.

Dr. Rand is an untiring worker, an enthusiastic teacher. Wherever he has labored he has inspired his students and co-workers with a spirit that has stimulated them to noble effort. At the age of fifty-three, although there is no sign of abatement to his intense energy and tireless activity, he has been warned that he must seek rest and leave of absence from work for at least a year. He will visit these Provinces in July and will take part in the proceedings of the Interprovincial Convention of Teachers.

EDUCATIONAL OPINION.

I am glad to have to say that the study of the elementary principles of agriculture has been prosecuted with considerable success by the student teachers, and that during the past year, all, without exception, have had the subject so elucidated that they ought to be able to communicate instruction in it to their more advanced pupils. This in itself is a very noteworthy advance, and probably all that can be done until it be recognized as a distinct branch of study, with a laboratory for practical purposes, and a teacher specially trained to conduct classes in it. As we have already a stock farm, may we not hope that, at some day, not distant, it may be converted into an experimental farm, and that a practical training in agriculture may be available for such as desire it under the supervision of a competent scientific agriculturist.—*Principal Anderson, Prince of Wales College, Charlottetown.*

It is generally true that the schools are improved only by the pressure of public opinion and cannot rise higher than the average intelligence of the community, yet there are schools in which the work done by the teachers and pupils is much better than the ratepayers appear to think it is—if we judge by the mean appearance of the school and the manner in which it is furnished. But the character and value of the school depends on the quality of the teacher more than on all things else.—*Inspector Cain, P. E. I.*

Teachers are engaged to do a certain amount of work per day for so many days in the term or year, and when their day's work is performed, their obligation for that day is fulfilled. True: but the faithful performance of a day's work presupposes a thorough understanding of the work and ability to perform it. Wanting this thorough understanding and consequent ability, the moral obligation of the teacher is not fulfilled by spending so many hours in the school-room. Such an one is bound to secure for himself the necessary aids in the shape of books and other school literature, and to spend the necessary time outside of school hours in preparation for the work of the morrow. Teachers enjoy advantages nowadays which were not possessed by their predecessors when there was no recognized system, but when each had to work out a system for himself.—*Inspector M. J. T. Macneil.*

The schools generally are fairly well supplied with blackboards and maps. If globes and mathematical blocks could be cheaply and conveniently had, I would very strongly recommend their introduction into many of our common schools. Much could be most profitably done, orally, with such aids, in entering upon the study of geography, geometry and kindred subjects. At present, however, these helps are rarely found in our common schools, owing to their costliness and the expense incurred in getting them from abroad. A few of our more enthusiastic teachers have brought the skill of our home turners and joiners into their service, and thus procured for their schools most serviceable, if somewhat rude, apparatus.—*Inspector A. G. Macdonald.*

The teaching on the whole was characterized by an increasing effort to approximate more closely to the standard of the prescribed course of study. Considerable prejudice still exists as an obstacle to the full adoption of this standard of classification and school-work, and teachers in many sections incur the risk of unpopularity by insisting on compliance with its requirements. In several sections pupils have been withdrawn from school in their own section and sent to an adjoining one on such grounds. When appealed to, I have invariably refused to sanction such transfer. It is not surprising that this opposition should be met with among the ignorant, where nothing but the practical is recognized as of value in education; but unfortunately it is becoming fashionable among those who should know better, to condemn what they term "a multiplicity of subjects for young children." They should remember that "diversity is relaxation," and that the amount of instruction prescribed is graded in proportion to the age and capacity of the pupils. As a matter of fact, I have not observed any superiority of attainment in reading, writing and arithmetic among those pupils who have been taught these subjects to the exclusion of all others. On the contrary, the greatest proficiency in these branches is invariably found in those schools where all the subjects of the course receive their due share of attention. Teachers, as a rule, cheerfully acknowledge the utility of the course, and it is to their faithful adherence to their convictions that we must look for the overcoming of this prejudice.—*Inspector R. McLellan.*

The majority of our people have the utmost confidence in our school system, and are willing to make great personal sacrifices to enable their children to attend our schools.—*Inspector Geo. W. Mersereau.*

The Trustees of............school, Section No. ... are notified that, in compliance with the school law, you are required to furnish the following, in addition to the ordinary text-books, of which each pupil shall have the supply required of his grade:

1. Clock.
2. Hand Bell.
3. Thermometer.
4. Ball Frame.
5. Wall Cards.
6. Map of Nova Scotia.
7. Map of Dom. of Canada.
8. The Hemispheres.
9. Globe.
10. Map of ————.
11. Calkin's Object Lessons.
12. How Plants Grow.
13. Science Primers.
14. Health Lessons.
15. Temperance Manual.
16. Prang's Nat History Series
17. Manual of Drawing.
18. Chart of Colors.
19. Models of Solids.
20. Dictionary.

—*Inspector C. W. Roscoe.*

A number of our teachers have recently matriculated in arts, medicine and law, making averages ranging from 80 to 90. Two have obtained bursaries of two years continuance worth $150 each per annum. And in a keenly contested competition with representatives from nearly every county in the province, at the recent Pictou Academy Annual examinations, one of our teachers succeeded in winning a beautifully ornamented silver cup, presented to the student of the senior class making the highest general aggregate of marks in the academic course—comprising, in addition to branches of a more ordinary character, Greek, Latin and German.—*Inspector John Y. Gunn.*

An Inspector says: "I am delighted with the EDUCATIONAL REVIEW, and I am happy to say that every educationist worthy of the name, with whom I compare notes upon the subject, is of the same mind. How any teacher with an ordinary amount of vim in him can afford to do without its periodical bracing up is a marvel. I am especially pleased with the articles on the "Ferndale School" and on Astronomy. The former fairly bristles with practical knowledge and the latter brightens up old memories. I want more diagrams in your "Trips among the Stars." Many of your readers will rise up and bless your efforts to raise their aspirations above the crawling worms of earth."

MANUAL TRAINING IN THE TOLEDO SCHOOLS.

The opposition to manual training manifested in various quarters arises largely from the lamentable ignorance which prevails as to its aims and results. Many seem to think that the sole object of industrial training is to make mechanics and train them to mere manual dexterity. This is an utterly erroneous idea. The manual work is to train the senses, to quicken the perceptive power, and to form the judgment by furnishing the pupil an opportunity to study at the bench, forge, lathe, and engine, the nature of matter and the manifestations of force. It is purely educational in its object. It first teaches the pupils to portray in the drawing a variety of beautiful and useful forms, and then to embody these forms in wood, clay, and metals. It teaches how to express thought, not in words alone, but in things. It produces nothing for the market except well trained minds, seeing eyes, and skilful hands. In the ordinary factory, which produces for the market, the individual is nothing, the article is everything. In the manual training school the articles made are of no moment, the boys and girls are all important. As soon as a pupil makes one thing well, he is led on to something higher and better. The pupils make many useful and beautiful things, but these are of no value compared with the knowledge gained, the symmetrical mental development acquired. Some of the advantages, other than those named, apparent from the manual work combined in this way with the public school studies, are: The industrial work holds a far greater proportion of pupils throughout the entire course of study, and thus gives them the benefits of a more complete education; it conduces to their moral welfare, not that it gives them "a passport to heaven," but employs all their time in a pleasant and healthful way, thus preventing idleness and crowding out impure conceptions that might find a harbor in the young mind; it dignifies and exalts labor, and teaches respect for the laboring man; it teaches no special trade and yet lays the foundation for any trade, and gives the youth such knowledge and skill that he becomes a sounder and better judge of men and things in whatever business or profession he may engage. Manual training is a successful branch of study in the Toledo schools, not because it is theoretically a good thing, nor because it is given undue prominence and special advantages, but because it is in harmony with the nature of things, has a noble purpose in view, has been well managed, has good instructors, and has proved itself of great value to the pupils.—*H. W. Compton, Superintendent of Schools, Toledo, Ohio, in the May Century.*

FALSE SYNTAX.

Since the "time whereof the memory of man runneth not to the contrary," grammars, composition and language books have contained a plentiful supply of what has been termed "false syntax," "errors for correction," and the like. Is this a scientific method? Has the correction of false syntax any considerable educational value? Are there not serious reasons for believing that such exercises involve not only a waste of time but a positive injury to the student?

I cannot state my proposition in a general way more clearly than to restate a suggestion, emanating from Col. Parker. In speaking of the efforts of first primarians in their written work, it was advised that the attention of the pupil should never be directed to his errors. It was urged that to call attention to a bad form, with a view to showing him how far he was from the correct form, resulted in so deeply impressing the poor form that in his very next effort he inclined unconsciously to repeat his error; the impression of the incorrect form being uppermost in his mind predominated in his effort. Promptly and quietly erase the mistake, then give him a correct model, impress that upon his mind and ask him to imitate it. His mind not being disturbed by a misleading concept, now devotes itself to reproducing the model placed before him. I have ever since regarded it as a wise and valuable suggestion and have been highly gratified over the success we have had in its application. It seems to me to be logical in theory and wholesome in practice. Now if this is a correct pedagogical principle—and if it is a correct pedagogical principle it has its foundation upon a psychological law—in the domain of first primary work, is it not just as true, and just as applicable in advanced language work? The mere difference in mental growth and capacity does not restrict the principle to small children. Smart teachers have repeatedly told me that after examining many spelling papers and seeing certain words so often misspelled, the incorrect form of the word was uppermost in the mind, and only with difficulty could they decide with certainty as to the proper spelling. Who has not often been mislead in the spelling and use of a familiar word from having seen it spelled or used improperly somewhere, having unconsciously carried with him an impression that asserted itself on first opportunity?

Is it correct teaching? Are not schoolmasters the only class of instructors that use this method—teaching the good by emphasizing the bad? Does the music teacher give an incorrect model in order to inspire a pupil with correct notions of harmony, time, and rendition? Does the art teacher make hideous daubs and caricatures as aids to the student in acquiring the taste and skill of the artist? Does the housekeeper, when teaching her daughter the mystery of bread-making, purposely bake an unpalatable loaf and then say: "Daughter, this is not the kind of bread you should bake?" Or the wagon-maker very carefully put the tongue on the rear of the wagon and then say to his apprentice: "I have done this to impress upon your susceptible mind so you may never forget it that the tongue must always be attached to the front part of the structure where it belongs?" Are these illustrations more absurd than to expect pupils to acquire good English by holding up bad English before them and saying: "This is the way you are *not* to talk?" Correct errors of speech as they arise in current class-work. Ever exalt correct models; build them up in the minds of pupils. The rational plan is to dispossess the mind of all incorrect forms of expression, and as far as possible banish them forever. Teach good language by the constant use of good language and the careful study of pure and elegant models of our English.—*Supt. Gault in N. Y. School Journal.*

Professor James says: "No one can doubt, who has taken any pains whatever to institute extended comparisons, that the teaching in our elementary schools is much better on the average than that in the secondary school and college, and that the teachers in the former come much nearer realizing the end which they set before them than the latter."

THE BLUE VIOLET.

Blossom that spread'st as spring brings in
  Her sudden flights of swallows,
Thy nets of blue, cool meshed and thin,
  In rain-wet pasture hollows.

Thronging the dim grass everywhere
  Amid thy heart leaves tender,
Thy temperate fairness seems more fair
  Even than August's splendor!

Yet do I hear complaints of thee,
  Men doubting of thy fragrance!
But, dear, thou hast revealed to me
  That shyest of perfume-vagrants.

Do ever so, my flower discreet,
  And all the world be fair to,
While men but guess that rarest sweet
  Which one alone can swear to!

—*C. D. G. Roberts.*

The Study of Things and the Study of Books.

An objection is sometimes raised to the introduction of manual training into elementary schools on the ground that, as the children of the working-classes necessarily leave school at an early age, and spend their lives for the most part in manual work, such time as they can give to study should be occupied in other pursuits—in cultivating a taste for reading, and in the acquisition of book-knowledge. This objection is due to a misconception of the true objects and aims of education, and to an imperfect knowledge of what is meant by workshop instruction. To assume that the best education can be given through the medium of books only, and can not be equally well obtained from the study of things, is a survival of the mediævalism against which nearly all modern educational authorities protest. But there is another and more deeply-rooted error in this argument. People often talk and write as if school-time should be utilized for teaching those things which a child is not likely to care to learn in after-life; whereas the real aim of school education should be to create a desire to continue in after-life the pursuit of the knowledge and the skill acquired in school. In other words, the school should be made, as far as possible, a preparation for the whole work of life, and should naturally lead up to it. The endeavor of all educators should be to establish such a relation between school instruction and the occupations of life as to prevent any break of continuity in passing from one to the other. The methods by which we gain information and experience in the busy world should be identical with those adopted in schools.—*Sir Philip Magnus.*

TRIUMPHS OF SCIENCE.

Archdeacon Farrar in a recent address at Liverpool College, said:—

"In this great commercial city, where you are surrounded by the triumphs of science and of mechanism —you, whose river is ploughed by the great steamships, whose white wake has been called the fittest avenue to the palace front of a mercantile people, you know well that in the achievements of science there is not only beauty and wonder, but also beneficence and power. It is not only that she has revealed to us infinite space crowded with unnumbered worlds; infinite time peopled by unnumbered existences; infinite organisms hitherto invisible, but full of delicate and iridescent loveliness; but also that she has been, as a great Archangel of Mercy, devoting herself to the service of man. She has labored, her votaries have labored, not to increase the power of despots or add to the magnificence of courts, but to extend human happiness, to economise human effort, to extinguish human pain. Where of old men toiled, half blinded and half naked, in the mouth of the glowing furnace to mix the white-hot iron, she now substitutes the mechanical action of the viewless air. She has enlisted the sunbeam in her service to limn for us, with absolute fidelity, the faces of the friends we love. She has shown the poor miner how he may work in safety, even amid the explosive fire-damp of the mine. She has, by her anæsthetics, enabled the sufferer to be hushed and unconscious while the delicate hand of some skilled operator cuts a fragment from the nervous circle of the unquivering eye. She points, not to pyramids built during weary centuries by the sweat of miserable nations, but to the lighthouse, and the steamships, to the railroad and the telegraph. She has restored eyes to the blind and hearing to the deaf. She has lengthened life, she has minimised danger. She has controlled madness. She has trampled on disease. And on all these grounds, I think that none of our sons should grow up wholly ignorant of studies which at once train the reason and fire the imagination, which fashion as well as forge, which can feed as well as fill the mind."

An examination is not so much for the purpose of finding out what a pupil knows, as *ascertaining his mental power*. Technical knowledge goes for everything in a school graded according to the cast-iron plan of some critics; but it goes for much less in a school where each pupil is studied, as far as it is possible to do so, and treated according to his individual wants.

ENGLISH IN JAPAN.

A lady teacher who went from Halifax to Japan some years ago, sends to a friend in that city the following composition, written by a Japanese student in an English school:

THE UNITED STATES THE FATHER OF OUR CIVILIZATION.

Our ancestors slumbered in their shutted houses for about twenty-five hundred years, when a messenger came, and knocking the gate, requested to communicate.

They sprang up and opened the gate, but they found that the messenger was a very ugly man, and they thought, 'This is the barbarous people about which we often heard before, and who eats the beasts as their ordinary food.'

Some of them cried—Never communicate with such an ugly people. Give me a sword, I will put them all to death? But some of them who knew more exactly about foreign people wished to communicate. At this time, it was too late to sleep any more, and a communication followed.

The more exactly they knew them, the more respectable they became. It is their gift that we may now boast of calling our country the most civilized country in Oriental. Who is that visitor of our country? It is the people of United States.

We have been promised a description of a Japanese school for the columns of the REVIEW. This will appear in a future number. The lady teacher above referred to, in a letter, makes the following interesting statements about her adopted country:

"Until the last few years the Japanese thought it abominable to eat animal food and would not take the life of animal or insect.

"Foreigners are permitted to live *only* in Yokohama and a part of Tokio, unless they teach, when they may live in any part of Japan. No one can go more than two miles out of either of these places without a passport.

"The Japanese would open up the entire country to foreigners if the English government would allow their people to be under Japanese law. But the English will not do so."

The object of teaching is good citizenship, and that implies development of the best faculties of children's minds. Good citizenship implies intelligence, industry, patriotism and temperance.—*Topeka Capital.*

It is impossible to insist too strongly upon the fact that efficient teachers of science and of technology are not to be made by the processes in vogue at ordinary training colleges. The memory loaded with mere book-work is not the thing wanted—is, in fact, rather worse than useless—in the teacher of scientific subjects. It is absolutely essential that his mind should be full of knowledge and not mere learning, and that what he knows should have been learned in the laboratory rather than in the library.—*Huxley.*

For the REVIEW.]

KINDERGARTEN DISCUSSION AT THE INTER-PROVINCIAL CONVENTION.

Those interested in the progress of Kindergarten culture will be pleased to learn that a full discussion of the special topic, "The Practical Application of Kindergarten Principles to the Primary School," is upon the programme. It is not wide of the truth to say that no more important question will fall under the consideration of those who attend the convention. We trust that our Nova Scotia teachers, without distinction of sex or grade, will prepare themselves to take an intelligent part in the discussion. They should study not only the methods of the Kindergarten, but also the profound principles on which these methods depend. Frœbel's distinction as an educator does not rest simply upon the Kindergarten, although that alone would confer imperishable fame, but on the deep spiritual insight that enabled him to take a comprehensive view of man in his complex relations to nature, to the human race as a solidarity, and to the Divine Father. He grasps the spiritual significance of the incidents of everyday life. Every little childish play is seized upon as a means of alluring the child to a higher plane of thought and feeling. In the "Mother-Play and Cosselling Songs" it is shown how the infant play of "Peep-Bo" charms by the "connection of contrasts." The little one hides; not having mother in full sight is pleasing as a new sensation; but see the delight that expresses itself in every lineament and feature when, "found," he is clasped in the loving arms again. "Let him not," says Frœbel, "stray too far, nor stay too long, lest he lose his sweet, clinging dependence on your faithful love and guardianship." We recommend to teachers Frœbel's two works: "Education of Man," Hailmann's edition, annotated; and "Mother-Play and Cosselling Songs." This last, translated by the generous aid of Mrs. Pauline A. Shaw, was used by Miss Blow in her instructions to her training class in St. Louis with excellent results. It contains verses for mother and child, with music, and has the quaintest illustrations, by Frœbel himself, full of incident and suggestion. If every mother and teacher would study with childlike docility this wonderful book, it would, in many cases, be such a revelation that the whole course of training would be changed, to the great advantage of the children. But, as the time is short, and only special work has much chance of accomplishment, we sincerely wish that Dr. Hailmann's "Primary Methods," and Prang's "Teachers' Manual for the Study of Form and Drawing," could be in the hands of all our teachers. If they would read them, even cursorily, it would place them well for the discussion at the Convention. Their serious study during vacation would show itself in the coming term in improved teaching in our schools, especially in arithmetic, geometry, drawing, and modelling. "Primary Methods" is published by A. S. Barnes, New York, 75 cents; "Prang's Manual" by Prang, Boston, 50 cents. For $1.50 a box of material is sent with the Manual, so that the teacher could gain facility in illustrating and superintending the exercises of the little book. It is as unique as simple in its methods, and is the outcome of several years' study by Mrs. Mary Dana Hicks, of drawing for children, from the standpoint of physiology and psychology. The object is to teach pupils to *see correctly*, to gain clear conceptions through well defined sense impressions, and to embody their ideas in concrete forms in different materials, as clay, paper, card-board, sticks, pencilled lines, water-colors, etc. Dr. Hailmann's work is strong in its application of Frœbel's methods to geometry and arithmetic; Prang's in its treatment of modelling and drawing. But both smooth a hard place where there has been much stumbling, and they are so logical that no one who will follow their lead need fail of success. Two or three or more teachers might join and get a single copy of these books, and the necessary material, and study them in concert; if they could beguile some intelligent mothers to join them for an occasional hour of reading and discussion it might create community of interest and help the cause of education.

C.

Halifax.

PERSONAL NOTES.

R. P. Steeves, of the Woodstock Grammar School, recently passed a successful examination at Sackville for the degree of M. A.

Victoria University, of Coburg, Ont., has conferred the degree of LL. D. on Prof. A. D. Smith, of Mount Allison University.

Rev. President Forrest, of Dalhousie, passed through St. John this week on his way home from a trip to the United States.

Abbe Casgrain, of Quebec, succeeds Professor Lawson, of the University of Dalhousie, as President of the Royal Society of Canada.

Principal Cameron, of Yarmouth Academy, gave a very interesting series of popular astronomical demonstrations during the winter. He recommends students of the Summer Science Schools to buy or borrow opera or field glasses for the study of the sky.

Inspector Lay has given a course of popular scientific lectures in Amherst during the last winter. The local press had invariably words of high praise for his work.

Professor Macoun, Botanist of the Geological Survey of Canada, intends spending the summer in Prince Edward Island. He will arrive probably about the middle of June.

Simon Newcomb, LL. D., Professor of Astronomy in the Johns Hopkins University, Baltimore, and the author of several astronomical works, was in St. John recently. Dr. Newcomb is a native of Kings County, N. S., and expects to spend a portion of his vacation this summer in his native province, and seek a much needed rest.

G. R. Parkin, M. A., of Fredericton, will leave New York on the 16th of June for England, with a view of preparing material for the biography of the late Mr. Thring, of Uppingham School. Mr. Parkin's intimate knowledge of the life of this great educational writer and thinker renders him specially fitted to undertake the task.

SCHOOL AND COLLEGE.

Mr. A. P. Silver, the well known entomologist of the Nova Scotia Institute of Science, addressed the students of the Halifax Academy, on Friday, May 26th, on the collecting and preserving of insects. Several prizes have been offered for the best collections.

Prizes have also been offered for the best collection of the Nova Scotian Orchidaceæ. Our orchidaceous native flowers are among the most beautiful and interesting of our flora.

At Convocation of the University of Mt. Allison, on the 30th May, the following degrees were conferred: Graduates in course B. A., Reginald Percival Alexander, Stanhope, P. E. I.; Aldran Allen, Albert, N. B.; Thomas David Blaikie, Great Village, N. S.; Edie Annie Elizabeth Burwash, Sackville, N. B.; Clarence Edward Casey, Amherst, N. S.; George Frederic Dawson, Campbellton, N. B.; Albert Charles Dennis, Margate, P. E. I.; Peter Coffin Laverton Harris, Halifax, N. S.; William Jost Howard, Cornwall, P.E.I.; Fred. Harris Pickles, Halifax, N. S.; Sarah Letitiah Shenton, Charlottetown, P.E.I.; Aubrey Cecil Smith, Sackville, N. B. M. A.—Rev. David William Johnston, B. A., Horton, N. S.; Rufus Palmer Steeves, Woodstock, N. B.; Albert Bliss Tait, Sackville, N. B. Honoris Causa, L. L. D.—Professor A. R. Bain, M. A., Coburg, Ont.; D. C. L., Hon. Justice Burbidge, M. A., Ottawa; D. Sc., Rev. John Burwash, M. A., Sackville.

The anniversary exercises of Acadia College took place this year on the 7th June. The graduating class was comprised as follows: James W. Armstrong, Kingston; Oliver H. Cogswell, Morristown; Carmel L. Davidson, Gasperaux; Horace L. Day, Yarmouth; Chas. W. Eaton, Lower Canard; Herbert O. Harris, Canning; Lewis J. Lovett, Kentville; Morley D. Hammeon, Wolfville; Walter B. Wallace, West Gore; Lewis D. Morse, Nictaux; Alfred E. Shaw, Avonport; Harry S. Shaw, Berwick; Harry H. Wickwire, Canning; J. R. Hutchinson, Wolfville.

For the first time in the history of St. Joseph's College, Memramcook, the faculty will confer degrees at the 23rd annual commencement, which will be held on the evening of the 21st of June instant. The college is now a chartered one, and the exercises on the coming commencement day will constitute its first really Academic Commencement. The Alumni orations will be delivered by Geo. V. McInerny, LL. B., and Hon. P. P. Porier.

The closing exercises of Prince of Wales College, Charlottetown, came off on the 25th ult. An unusually large number of visitors was present. Addresses were delivered by Dr. Anderson, the Principal, Lieutenant-Governor McDonald, Hon. L. H. Davies, Hon. David Laird, and others. Reference was made by some of the speakers to the growing interest taken in the college both in town and country, and to the necessity of a new college building.

The New Brunswick Normal School closed on Friday, the 8th inst. Of 136 students classified for examination, 26 were male and 110 female. Two were examined for grammar school license, 24 for first-class, 83 for second, and 27 for third.

In 1887 Canada had 12,292 miles of railway in operation, carrying 10,685,508 passengers during the year, 16,367,987 tons of freight, equal to 3·35 tons per inhabitant.

The world consumes annually about 650,000 tons of coffee. At an average price of $400 a ton this is worth $260,000,000. The best is from Jamaica, 5,000 tons. Then Hindostan and Ceylon, 25,000 tons. Next Java, about 90,000 tons, and Brazil with about 380,000 tons.

QUESTION DEPARTMENT.

Questions and Answers.

Y. S. F. 1 —As it is impossible to see the entire half of a sphere, what answer should be given to question 3, page 7, Calkin's General Geography: "At what elevation above the earth would one be able to see half its surface?"

The earth is a spheroid, surrounded by an atmospheric film which refracts light. The mean refraction of this film is such that a ray of light proceeding from an object on the earth's equator parallel to the earth's axis would be refracted towards the earth's axis 33 minutes of an arc after leaving the air. This ray would meet the axis of the earth produced about 412,725 miles from the earth's centre. This may be shortly found as follows: Semi-diameter of earth = 3,962 miles, multiplied by co-tangent of the angle of refraction $0^\circ 33' = 104\ 17094 \times 3{,}962 = 412{,}725 +$ miles. An eye, therefore, placed at this distance from the centre of the earth in the line of its axis would have its terrestrial view exactly bounded by the equator. A correct answer to your question would, therefore, be: *At an elevation of about 408,763 miles above the earth's surface.* Were the refraction of the air not taken into account, the answer would be: *At an infinite distance.*

2.—Why is the ice formed on sea-water fresh?

The molecules of water are strongly attracted to each other, but are kept apart within certain limits by the heat vibrations of the molecules. When these vibrations are lowered to what we call the freezing temperature the molecular attractive force prevails, drawing the water molecules into a more fixed and rigid connection with each other and pressing out into the liquid water the less strongly attracted molecules of the sodium chloride. The water molecules in freezing are strongly drawn in to the ice-forming surface, while the salt molecules, not being strongly attracted by this surface, are crowded back into the liquid water.

3.—Are the enclosed specimens of *Viola cucullata?*

No. It has a stem with leaves and branches, which, with its pale purple corolla with bearded lateral petals, and its fringe-toothed stipules, show it to be *Viola canina*, var. *sylvestris* (the Forest Dog Violet). Sometimes it is called Muhlenburg's Violet, from a name given it by Torrey before it was decided to be a variety of *V. canina.*

4.—What difference is there between the appearance of Land and Water Salamanders?

The tails of Water Salamanders are strongly flattened, vertically, sometimes with a ridge or crest running along the back of the animal. Land Salamanders like moist, wet places, but are not adapted for swimming.

J. A. V.—Will you kindly inform me if insects, including the various kinds of winged flies, moths, house flies, butterflies, wasps, beetles, etc., come from the pupa in the size they are seen and known, or do they improve and develop in size as other orders in Natural History?

The insects you specify develop in size during the larval stage. The imago is the adult stage and growth is complete. Ametabolian insects, that is those which do not pass through the three distinct changes of larva, pupa, and imago, increase in size while they have the adult form, as the *aptera* (lice and springtails). Hemimetabolian insects have the larval forms very much like the imago, and therefore appear to grow in size from moult to moult, as the grasshopper, for instance. The full-winged grasshopper, however, is the imago, and develops no more in size.

LITERARY NOTES.

Mr. C Powell Karr, a graduate of School of Mines, Columbia College, has in preparation a manual of American Colleges, which proposes to give in classified form all the leading Colleges, Universities, Technical and Professional Schools, their requirements for admission, courses of study, cost of tuition and living expenses, and, in a word, a systematic *resume* of all the information needed by parents, guardians and students to enable them to decide intelligently what college or institution of learning it is best to attend. It is to be issued from the press of William T. Comstock, New York.

Dr. J. G. Bourinot, clerk of the Dominion House of Commons, is about to publish a "Short Constitutional History of Canada," as one of the "English Citizen" series.

D. C. Heath & Co., Boston, will publish at once Compayre's "Lectures on Pedagogy: Theoretical and Practical," a companion volume to their Compayre's "History of Pedagogy." It is translated and annotated by Professor Payne, of the University of Michigan. Supt. MacAllister of Philadelphia, says: "I have known the book ever since it appeared, and regard it as the best work in existence on the theory and practice of education. It will be a much more valuable manual for the average teacher's use than any we now have."

BOOK REVIEWS.

The Handy Reference Atlas of the World, by John Bartholomew, F. R. G. S., etc ; containing 100 maps and plans, as well as a complete index and geographical statistics; size, 7½ by 5 inches. Price, $2.50 For sale by J. & A. McMillan, St John.

It is doubtful whether a book more useful to the geographical student has ever been published. It contains, in a neat and handy volume of convenient library size representations of general and particular geography. Opening the volume we find a series of maps illustrating many astronomical and physical features. This is followed by a map of Europe, then several of the British Isles, one showing the depths of the surrounding seas, another its railway system, while in several additional folio plates there are shown the sections of the country, including the chief cities and suburbs,—and so with all parts of the world. It is especially full in details of British Colonies and possessions. Its different maps of commercial routes are invaluable to the business man; while to the student and teacher it is so convenient for reference and at the same time so complete, that the study of geography will be invested with a new interest.

Practical Lessons in the use of English; Book I. for Primary Schools, Book II. for Grammar Schools; by Mary F. Hyde, Teacher of Composition in the State Normal School, Albany, N. Y.: D. C. Heath & Co., Publishers, Boston.

In these books we have an admirable series of steps, illustrating how the English language may be taught so as to secure the best expression of thought and at the same time to cultivate a taste for good literature. From the first, ideas of grammar and correct syntax are developed. No incorrect expressions are given for correction, but the pupils are led to avoid common errors by being trained to use correct forms. The books will be welcomed by all who are striving to teach English composition by natural and practical methods.

Cardinal Wolsey and William Third.—We have received the above named works in the "Twelve English Statesmen" series: Published by MacMillan & Co., London and New York.

The subjects of these sketches were men whose policy did much to make the England of to-day, and no one can rise from a perusal of the books without being profoundly impressed with the character of each. The author of "Cardinal Wolsey," regards that statesman as the greatest political genius and the most devoted patriot that England has ever produced. One may differ from the author's estimate, but he cannot fail to be influenced by the keen analysis of the aims and methods of Wolsey, as well as the striking and vigorous language in which the book is written. The author of William the Third has been less successful in placing a striking portrait before us, but he has given us a graphic delineation of the events of European history at that time.

Sea-Side and Way-Side; No. 2 of the "Nature Readers" by Julia McNair Wright: D. C. Heath & Co., Publishers, Boston.

All who read the first of this series must have been charmed with the delightful way in which the authoress introduces her subject. The simple and unique manner in which objects are described must awaken a strong interest in children's minds, arouse their curiosity, and lead to further observation. The second volume deals with the different kinds of ants and their habits, earth-worms, the house-fly, beetles and other insects. The descriptions are novel and interesting, and at the same time care has been taken to make them scientific and accurate.

World-English: The Universal Language; by Alex. Melville Bell. Published by M. D C.Hodges, New York.

This is a pamphlet (price 25 cents), giving a statement of the forms of the letters, the sounds, etc., with other information concerning the "World-English."

Wordsworth's Prelude; An Autobiographical Poem. Annotated by A. J. George, Acting Professor of English Literature in Boston University, and Teacher of English Literature, Newton, Mass., High School: D. C. Heath & Co., Publishers, Boston.

Few even of the most ardent admirers of Wordsworth are familiar with this remarkable poem which was not published until after the author's death and has never before been published apart from his complete works. It is a correct biography of the poet's life and shows the growth of his mind. While not so beautiful nor delightful as many of the smaller poems, it reveals the secret of their beauty and contains the key to that poetic philosophy which characterizes Wordsworth's writings. In the notes will be found such assistance—historical, geographical, and explanatory, as the student would not be likely to get elsewhere. The prelude will be followed by the publication of other of Wordsworth's poems.

EXCHANGES.

The *Illustrated London News* (American edition, published at New York,) has some fine sketches in its issue of June 2nd of the Anglo-Danish Exhibition at Copenhagen, in which the Prince and Princess of Wales have taken a great interest. . . . . *Garden and Forest* has had several interesting and valuable articles recently on the decoration of school grounds. Its weekly illustrations on garden and forest topics are valuable to a student. . . . . The *Scientific American* for June 2nd, commenced a series of articles on Fabulous Astronomy, which, to judge from the first, will possess considerable interest for the students of astronomy. . . . . The *Microscope*, 25 Washington Ave., Detroit, Mich., U. S. A., for May, is invaluable to the young microscopist, 32 pages, monthly, and only $1.00 a year. . . . The *Eastern Chronicle* is printed on a new press, and is one of the best looking weeklies in Canada. . . . . *Science*, 47 Lafayette Place, New York, is becoming weekly more interesting It gives most readable summaries of scientific work in America. . . . The *Swiss Cross* comes monthly laden with its usual good bill of fare. . . . . The *Yarmouth Herald* is one of our best filled weekly exchanges. In a late issue it had a brief sketch of Sir Wm. Dawson. . . . . The *Century* is specially interesting at present on account of George Kennan's graphic description of Russia and the exile system in Siberia. The first instalment of this serial appeared in the May number. The second of the series in the June number is a perfect revelation concerning the resources and climate of Siberia. No student should miss reading these articles. The *Century* is always well filled with the most interesting general articles, and is superbly illustrated with the best engraver's art. . . . . *St. Nicholas*, another of the *Century's* publications, is also finely illustrated and admirable for the excellence of its articles for youthful readers. . . . . *Wide Awake*, published by D. Lothrop & Co., Boston, is one of the most attractive magazines for children and the June number is especially beautiful. . . . . *Popular Science Monthly* for June has an excellent article on "Education and the Employment of Children," and its table of contents embraces a wide range of subjects, scientific and practical.

A CONVENTION

—OF THE—

TEACHERS OF THE MARITIME PROVINCES

OF CANADA,

Will be held in St. John, commencing on Tuesday Evening, July 17th, and continuing during Wednesday and Thursday.

On Friday there will be an EXCURSION TO FREDERICTON AND RETURN.

Arrangements are being made for reduced fares on all railroad and steamboat lines.

The general meetings of the Convention will be held in the Hall of the Mechanics' Institute, St. John. Meetings of Sections will be held at places designated at the time of the Convention.

PROGRAMME:

Tuesday, July 17.

A meeting for organization will be held in the Hall of the Mechanics' Institute at 7.30 p.m., when the officers of the Convention will be elected.

A PUBLIC MEETING at 8 p.m. will be presided over by Mayor Thorne of St. John, and addresses will be delivered by citizens of St. John and Portland.

Wednesday, July 18.

MORNING SESSION.

The Convention will assemble at 9 a. m., when the teachers of the different Provinces will enrol themselves with the assistant secretaries for the Provinces.

At 10 the Convention will be formally opened by an address from Theodore H. Rand, D.C L., President of Woodstock College, Ontario, to be followed by address s from J. G. Schurman, D. Sc., of Cornell University, and Prof. Ray Greene Hubling, Secretary of the American Institute of Instruction, New Bedford, Mass.

AFTERNOON SESSION.

At 2.30 p.m. an address will be given by Dr. J. G. Fitch, the well known educational author and lecturer, of London, England, on "Hand-work and Head-work in Schools," followed by Col. Francis W. Parker, of Cook County Normal School, Illinois—the subject to be hereafter announced. Addresses will also be delivered by Superintendent Crocket of New Brunswick, and Superintendent Montgomery of P. E. Island.

EVENING SESSION.

At 8 p. m. there will be a discussion on "The Influence of the College on Industrial and Social Life," by President Rev. Dr. Sawyer, of Acadia College, Dr. Harrison of New Brunswick University, Rev. Dr. Forrest of Dalhousie University, Dr. Inch of Mt. Allison University, Dr. Anderson of Prince of Wales College, and by Prof. Roberts of Kings College, and others.

Thursday, July 19.

The Convention meets in sections, at 9 a. m.

Section A.—Normal Schools. The following topics will be discussed: by Principal Anderson, of P. E. Island, "Scholarship as a Preparation for Teaching;" Principal Calkin, of Nova Scotia, "The Relation of the Normal School to the Subjects Taught in the Common School;" Principal Mullin, of New Brunswick, "The Relation of the Model School to the Normal School."

Section B.—Inspectors of Schools. Topics: "The Inspector a Necessary Factor in a Public School System;" to be discussed by Inspector Condon and Roscoe. "The Relation of the Inspector to the Teacher and the District;" by Inspectors Carter, Smith and Mersereau. Another subject will be discussed by Inspectors Arbuckle, Cain and McSwain.

Section C.—High School. Topics: "Science in the Curriculum," by Principal A.H. MacKay, of Picton; followed by Principal Mackay, of New Glasgow, on Physics," and A J. Denton, Halifax, on "Chemistry." "The Study of Plant Life," by Geo. U. Hay, St John; followed by John Brittain, Principal of Petitcodiac schools, on "Methods in Zoology;" "Literature," by Principal Cameron, Yarmouth, followed by W. Campbell, Truro, on the same subject.

Section D.—Common School. Topics: "Aims and Processes of Moral Culture," by A. W. Hickson, Portland, followed by Geo. Robinson, P. E. Island. "Physical and Moral Culture in the Play Ground," by W. T. Kerr, Woodstock. "Moral Influence of School Ornamentation," by Geo. J. Oulton, Dorchester. "Moral Culture," by Robert Campbell, P. E. Island, followed by L. A. McKenna, Halifax. "Grammar in the Common School," by Principal Burbridge, Halifax, followed by Geo. T. Miller, Hantsport, N. S., and J. D. McIntyre.

Section E.—Primary School. Topics: "Kindergarten methods in the Primary Schools," by Miss Lewis, Truro. "Social Instincts as a Factor in Character Building," by Miss Sullivan, Halifax. "Character Building on its Moral Side," by Miss Murphy, Portland, St. John. "Physical Culture as a Part of Character Building," by Miss Adams, St. John.

AFTERNOON SESSION.

Address on Agricultural Education by Prof. H. W. Smith, of the N. S. Normal School.

Address on the Delsartian School of Expression, by Mrs. F. W. Parker, of the Cook Co., Normal School, Illinois.

Address on Art Education by Miss Harriet C. Magee, of the Oshkosh, Wisconsin, State Normal School.

EVENING SESSION.

Public meeting at 8 o'clock, presided over by Sir Leonard Tilley, at which addresses will be given by Sir Wm. Dawson, Hon. Justice King, Chief Supt Allison, Hon. W. S. Fielding, Premier of Nova Scotia, Hon. A. G. Blair, Premier of New Brunswick, Hon. Mr. Sullivan, Premier of P. E. Island, and L. H. Davies, M. P., of Charlottetown.

Any persons may become members of the Convention by enrolment and payment of the fee of one dollar.

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27 & 29 KING STREET, - - SAINT JOHN, N. B.

Nova Scotia County Academy Entrance Examination, 1888.

Thursday and Friday, April 26 and 27.

ARITHMETIC AND ALGEBRA. 10 *a. m.*—12 *m.*

1. What is the difference between Numeration and Notation? How many kinds of Notation are there?

2. A person bought 68 bales of cotton cloth comprising 67048 yds., each bale contained 34 pieces, and each piece contained the same number of yards; find the number of yards in each piece.

3. Write square measure; find the number of inches in 6 m. 2 fur. 28 rds. $2\frac{1}{2}$ yds. 2 ft. 9 in.

4 Find the total cost of the following:

17 lbs. Sugar at $6\frac{1}{2}$c. per lb.
$3\frac{1}{2}$ " Tea " 40c. "
15 " Soap " 5c. "
12 gals. Oil " 32c. per gal.
6 " Molasses at 29c. per gal.

5. Define Fraction, Denominator, Numerator, Mixed Number, and find the value of

$$\frac{\frac{3}{4} \text{ of } 5\frac{1}{2} \text{ of } \frac{1}{8}}{4\frac{1}{2} \text{ of } 8\frac{1}{4}}$$

6. What will a creditor lose on a debt of $5342.25 if he receives only $67\frac{1}{2}$c. on a dollar?

7. What is Present Worth? Discount? Find the Present Worth of $1000 00 due in 1 yr. 4 mos., when money is worth 6°/ₒ.

8. A man, after spending $\frac{1}{2}$ of his money, and then $\frac{1}{3}$ of the remainder, and then $\frac{1}{4}$ of what remained, had $25.00 left; how much had he at first?

9. Find the sum of $ab - bx + cd - 3am + 7ab - 6xy + 3bx - 2cd + 9am - 3xy + 4cd - 2bx - 6am + 9xy - 3x + 2y - 2x^2 + 4ab$.

10. Multiply $a^2 + 2ab + b^2$ by $a - ab - b$.

11. Divide $4x^4 - 64$ by $2x$ 4.

GRAMMAR, ANALYSIS AND COMPOSITION. 2-3.30 *p.m.*

1. Name the "Parts of Speech" that "change their form in order to express difference of relation," and state what this change of form is called in each.

2. Give the Rule for the formation of the Possessive Case of Nouns, and give the declension of *wife*.

3. Name all the parts of speech which may be employed as "subjects." Write sentences illustrating the use of each.

4. Give the principal parts of the following verbs, classifying them as *weak* or *strong*: *slay*, *choose*, *grow*, *cut*, *cleave* (to split), *blow*, *meet*, *bear* (to carry), *steal*, *clothe*, *spill*, *creep*, *freeze*.

5. Write in full the past progressive indicative passive of the verb *take*.

6. Name the Interrogative Pronouns and state the uses of each.

7. Analyze: A few weeks before the death of Elizabeth, the conquest of Ireland, which had been begun more than one hundred years before by Strongbow, was completed by Mountjoy.

8. Parse: Tell the others what I said.

GEOGRAPHY. 9 *a. m.*-10.30 *a. m.*

1. Explain the terms Equator, Axis, Poles, Plateau, Prairie, Strait, Lake.

2. Name the rivers and lakes of Nova Scotia and the chief towns of Ontario.

3. Name the provinces and territories of the Dominion; and give the boundaries of New Brunswick.

4. What States of the American Union border on the great Lakes? Give their capitals.

5. Name the coast waters of Great Britain, and give the names and situation of the Provinces of Ireland.

6. Write a short description of France.

7. Describe Africa with respect to its surface, climate and productions.

8. Where and what are the following: Tadoussac, Manitoulin, Assiniboine, Qu'Appelle, Hudson, Sierra Nevada, Havana, La Plata, Apennines, Jersey, Elbe, Belfast, Naze, Tokio, Celebes.

9. Draw an outline map of Asia

The Educational Review.

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EDITORIAL NOTES.

AS THE time draws near for the first united gathering of the teachers of the provinces of Nova Scotia, New Brunswick and Prince Edward Island, the interest in the event is greatly quickened, and the prospect is that the attendance will be very large—not less than 700 or 800 visitors.

Such distinguished men as Sir William Dawson, Dr. Fitch, Colonel and Mrs. Parker, Prof. Huling, Dr. Schurman, in addition to the best educational talent that the Atlantic Provinces afford, is an inducement to be present that cannot be overlooked, and the inspiration gained by listening to such men will be full recompense for any sacrifice that may be made.

But there should be a great deal of pleasure in looking forward to a meeting which marks the bringing together for the first time, for social and professional intercourse, of the educational workers of these Provinces. Such intercourse with one another, and with some of the leading spirits of other countries, cannot but have a stimulating effect on our educational thought and action that will endure for years to come.

The cool atmosphere, and the many natural attractions about St. John, will make it an invigorating holiday trip. A list of hotels and boarding houses is published elsewhere, and we would recommend intending visitors to secure accommodations beforehand, as the influx of visitors to St. John during the hot season usually taxes the hotel accommodations to the utmost.

Arrangements have been made to secure reduced fares on all lines of railway and steamers to St. John, to those who attend the convention and register as members.

IT will be noticed that there are a few changes in the programme of the Interprovincial Convention, which is republished in this issue. In addition to these, it may be stated that Principal Creighton, of the North Sydney Academy, will read a paper on "English in the High School," should Principal Cameron be unavoidably absent, as the result of recent illness.

THE N. B. Natural History Society will tender a reception to Sir William Dawson during his visit to St. John next week. His Honor, Lieut.-Governor Tilley, as patron of the Society, will preside. The reception will take place on Thursday afternoon.

THERE is a prospect of King's College, Nova Scotia, uniting with Dalhousie; in which case the prestige, wealth and alumni of each would henceforth hold the same relation to the united university.

MR. W. F. GANONG, A.M., of Cambridge, has conferred a great service on Canadian zoologists by the publication of his work on the Echinoderms of New Brunswick in this year's bulletin of the N. B. Natural History Society. It contains a carefully prepared list of the forms known to occur here, with notes on their occurrence and means of their identification.

ONE who has Webster in his library has a dictionary, gazetteer and biographical dictionary in one volume. It is difficult to conceive how any working teacher can get along without it.

"Ferndale Notes," and a number of editorial and other articles are unavoidably crowded out of this number.

The young ladies of the Victoria High School, St. John, mentioned in the last number of the Review as competing for the degree of Associate in Arts in McGill University, passed a very successful examination and were awarded diplomas at the closing exercises of the school, June 28th. Rev. W. O. Raymond, as deputy examiner, presented the diplomas, and His Worship the Mayor presented other material prizes to the young ladies. The selection of His Worship the Mayor to bestow the prizes marks the city's appreciation of what Mrs. Carr is doing for the higher education in St. John, as well as the advanced position taken by McGill University in furthering the education of women. Dr. Harrison, of the N. B. University, in well-chosen words, congratulated the nine young ladies who passed the matriculation examination to the N. B. University, and presented certificates to each.

Let our readers before visiting St. John take a glance at the advertising pages of the Review, which, though condensed, are suggestive. The glance will be instructive in many ways. Bright and inviting book stores tempt literary people, and one has only to consult our pages to know what places may be visited to advantage. The name of the firm of J. & A. McMillan, which has steadily met the eye of every reader of the Review since the commencement of its vigorous growth, is a synonym for business integrity and enterprise. No one can visit their splendid establishment on Prince William Street without being agreeably impressed with its extent, and the admirable system that prevails there. The establishment of Manchester, Robertson & Allison has, perhaps, no superior in Canada. A visit to it, so as to gain an intelligent idea of its business volume and arrangements, is an education in itself. The London House, one of the oldest and most honorable business houses in these Provinces, has recently transferred its retail establishment to the corner of Union and Charlotte streets. But we have no space to particularize further.

Messrs. D. C. Heath & Co., Boston, offer for the attention of students a number of excellent scientific works. This firm is becoming well known for its enterprise in the publication of recent and valuable books for teachers and students. Mr. M. Chamberlain, so well known in business, social and scientific circles in St. John, has accepted the responsible position of head book-keeper for this firm.

It is expected that seventy-five students will attend the Nova Scotia Summer School of Science, which opens at Pictou on the 23rd inst.

The Berlitz Schools of Languages that have been established in St. John and Fredericton continue to gain steadily in popular favor, and no wonder, for the methods are simple and natural, and the Professors—Monsieur Ingres and Herr Bober, are enthusiastic and painstaking. Many members of their classes have made rapid progress in the French and German languages. New classes, in no case to exceed eight members, can be formed at any time.

Monsieur Vitrain, of Philadelphia, the President of the Berlitz School, will attend the Interprovincial Convention in St. John, and give an address on the aims and methods of the system. We bespeak for him a cordial reception.

The closing exercises of the Institution for the Deaf and Dumb, Halifax, took place on the 30th ult., and reflected clearly the good that is being accomplished by that beneficent institution, under its accomplished principal, Mr. J. Scott Hutton, and his staff of assistants. The following is the attendance for this session: Boys, 39; girls, 25; total, 64. From Nova Scotia, 45; New Brunswick, 5; Prince Edward Island, 6; Newfoundland, 8.

Inspector T. R. Patillo, in his annual report to the Nova Scotia Superintendent of Education, says:

> "The number of miscellaneous schools that did first-class work was larger than on any previous inspections. Some of those that a few terms ago I almost despaired of working up even to a moderate standard of excellence have become highly successful. The last term they did extremely well, showing thereby what may be accomplished in all the schools with the right person in the right place. With scarcely an exception the teachers that have attended the Normal School lately, have returned to us greatly benefitted by the training there obtained, and are now working successfully."

JOSHUA G. FITCH, LL. D.

The distinguished educationist, Dr. J. G. Fitch, of London, Eng., whose book, "Lectures on Teaching," is so well known here, will be in St. John on the 17th inst., and address the Interprovincial Convention. His subject will be "Hand-work and Head-work in the Schools," and, from his experience in almost every phase of educational work, especially in training teachers, and inspecting schools, much pleasure may be anticipated in listening to him. Dr. Fitch has been addressing audiences in New York and other places since his arrival in America, and takes part in the proceedings of the Convention of the American Institute of Instruction, which meets at Newport, July 9th. The committee of our Interprovincial Convention have been fortunate in securing such an eminent educationist, whose long and honorable connection with the schools of Great Britain so well qualifies him to speak on the subject he has chosen.

The following brief sketch of Dr. Fitch may serve to show how long and important has been his connection with educational work: Born in 1824, he gained his higher education at University College, London, receiving his degree of M. A. from the University of London. From 1851 to 1856 he was Vice-Principal, and from 1856 to 1863, Principal, of the Normal College of the British and Foreign School Society. While in this position, in conjunction with Dr. Cornwell, his colleague, he was the author of "The Science of Arithmetic," a book designed to aid teachers in explaining the *rationale* of arithmetical processes. In 1863, on the recommendation of Earl Granville, he was appointed one of Her Majesty's Inspectors of Schools, with charge of the Yorkshire district, but has since been repeatedly detached from that office on special and temporary service of a highly important nature. This service has for the most part consisted in making inquiries into the state of primary and secondary education in England, and reporting thereon. He was for ten years examiner in the University of London, in English language, literature, and history, and for twenty years was one of the special examiners for the civil service. He is now the senior Inspector of Her Majesty's schools.

He is the author of numerous articles on literary and educational topics, and his "Lectures on Teaching" has been largely circulated in Great Britain, the colonies, and especially in the United States, where it has been reprinted and is regarded as, perhaps, the best single book for teachers in elementary schools.

As to the field of higher education he is a member of the governing bodies of St. Paul's School, Girton College, Cambridge, and Cheltenham Ladies' College. In 1885, the University of St. Andrew's conferred upon him the honorary degree of LL.D.

CANADIAN TEA.

Our scientific editor has been at a five o'clock Labrador tea. The beverage was a success—rated by some as superior to China teas. It was prepared simply as follows: Leaves of the present season. Boiling water poured on, and kept covered for about twenty minutes; kept nearly to boiling point—but not allowed to boil. Sweetened with refined sugar. Cream or milk added. The dried leaf of *Ledum latifolium* could be put on the market, allowing the widest margin, at ten cents per pound.

CANADIAN TREPANG.

In the waters surrounding the Atlantic Provinces, a holothurian, *Pentacta frondosa*, Jaeger, very similar to the trepang of the Malay and Chinese coasts, is found in great abundance. It is called by our fishermen the "Sea-cucumber" or "Sea-pumpkin." A few experiments have been made on it as an article of food, and it has been pronounced good, with the flavor of lobster-meat. Trepang, in the East, is prepared by dipping the live "Sea-cucumber" for two minutes in boiling water, then cutting open, then throwing into a second cauldron of boiling water and mimosa bark. It is finally dried in the sun, and pressed for stowage. The market value has been quoted at from five to six dollars per hundred pounds; and the fisheries are considered of industrial importance. Will not some of our ingenious fishermen, or fish dealers, make a thorough test of our own "Sea-cucumber," and settle the question whether there is to be any Canadian trepang or not.

CANADIAN EDIBLE FUNGI.

Thousands of dollars' worth of edible fungi, nutritious and delicious when properly cooked, are spontaneously produced by nature, and constantly going to waste in these Provinces, from a lack of knowledge. The common mushroom, *Agaricus campestris*, is only one of a great number of species, on which the poor farmer might occasionally dine as a lord, did he know the possibilities under his hand. Some species are poisonous, others are offensive or inedible. But little training would be required to distinguish one from the other, and to discover a method of cooking which would develop all their deliciousness.

At some future time—not the present year—we expect to give some plain account of the more common edible fungi, with figures, to enable our teachers to introduce a more complete knowledge of this interesting class of vegetation into all districts of the country. In the meantime the teacher should be always a close observer of nature on every hand. Never should he neglect careful examination of anything coming under his attention, because he thinks he may not be able to name it or classify it. Such a teacher may well be said to be a blind leader of the blind.

On account of the absence in Europe of Dr. Th. H. Rand, Sir Wm. Dawson will, if he reach St. John in time, open the Convention, on the topic, "Reminiscences and Prospects of Education in Canada," a theme which, in the hands of this distinguished educationist, will prove of the greatest interest.

PUBLIC EXAMINATIONS.

We wish it to be distinctly understood that we are not the foes of inspection and properly conducted examinations. Where the people are called upon to support a system of public instruction, it is their duty, as it is their interest, to see that the money they contribute is expended so as most to promote the public advantage. They are bound to keep a vigilant outlook upon the proceedings of the public officers who discharge the duties pertaining to this department. Through their superintendents and instructors they reach every school and are kept informed of educational success or failure throughout their province. They can determine whether the education of the province is in a state of efficiency, as far as can be learned from statistics, and decide respecting the value of the suggestions which are offered to secure more gratifying results. The means taken by the officials of the educational departments to obtain this information may not always be above criticism, and may not be the best adapted to provide them with the most accurate data upon which to base their estimate of a school, but we are willing to accept their results and do not desire to quarrel with the method by which they are reached. These officers have a definite object in view, and they avail themselves of whatever instruments they think best for their purpose; they are men who ought to have been selected for the discharge of this duty because of their special fitness, from their experience, accomplishments, high character, judgment and prudence, and, therefore, men who enjoy the confidence of the community and the teachers.

But what shall we say of these public examinations which are still held in almost every public school and generally at this season of the year? It cannot be doubted that previous to the age of government inspection there was some reason for the custom, for it was the only occasion upon which the teacher and the public came into official contact, the only day during the year when the school-room was thrown open to the parents and friends of the pupils, and the educational methods of the school were exposed to the inspection and criticism of the visitors. Under these circumstances, an examination, partial and unsatisfactory though it was, was of some benefit. It served as a stimulus both to teachers and pupils, and, in some degree at any rate, evoked a certain interest in the work of the teacher and supplied a means by which the character of the school might be tested. But now when the machinery by which this is accomplished is elaborated to such a degree, what good end can be served by the continuance of the custom? When, as is the practice in the larger towns, the pupils have not only to submit to the ordeal of an examination by the government inspector but to that of a grading officer besides, why should the old and now entirely useless habit of a public examination be so tenaciously clung to? Is it not the fact that, sometimes, on these occasions, when gentlemen are called upon to express their opinion of the school, from what they have seen, they rashly do so, and unwittingly put themselves in antagonism to those who have better means of judging, and are better fitted to form an opinion of the work of the school? The speaking on such occasions is for the most part meaningless laudation, and where it becomes critical and suggestive it does so from imperfect knowledge and a partial view of the circumstances, and is but little calculated to encourage, stimulate or instruct either teachers or pupils.

Such an examination partakes more of the nature of an exhibition, than an occasion for testing the acquirements of the pupils. Teachers are sometimes engaged in preparation for weeks, and we have known cases in which the special lessons of the examination day were repeated at intervals for months, that the display might be a success. Now, to good teachers such work is very distasteful, and is performed by them, not from choice, but necessity. They know, that to the superficial observer, readiness in answering is the first and indispensable requisite in a pupil, and they have to govern themselves accordingly. By this standard, then, scholars are compared with those of other teachers, and not by their ability to grapple with and overcome difficulties, their tenacity of purpose, and their power of understanding. They are, therefore, compelled to resort to methods in which the memory plays the most important part, that their examination may be successful.

Now, this is an injustice both to the teacher and the scholar. Examinations, as conducted by the inspectors, are, or ought to be, quite sufficient to determine the qualifications of the pupils. And if it still be necessary to have a public occasion on which the parents and friends of the children may meet them in school and signalize the end of the school year, and the commencement of the holidays, let it be a real exhibition, and not a mixing up of things which ought to be kept separate. Let us have, by all means, as fine a display as can possibly be prepared. Reading is one of the first of accomplishments, and if the prospect of readings and recitations at the end of the year will stimulate to greater effort, and enable scholars to attain greater excellence in elocution, the observance of such a closing day will not be without utility. And, we doubt not, that a like favorable result would attend upon an exhibition of specimens of penmanship, needlework, and drawing. Compositions written during the year might also be read, and, doubtless, this all-important branch of education would thereby demand and secure a much greater share than heretofore of the teachers' time and attention. Whilst music, calisthenic and gymnastic exercises and drill would not only lend charm and variety to the occupations of the day, but equip the participants with an accomplishment which shall be an unfailing source of pleasure, and a physique so developed and invigorated that it can respond without injury to all the demands of after life.

The vast majority of those who take an interest in school examinations can understand and appreciate such a display as this. All the elements of its composition are admirably suited to the occasion. The exuberant spirits of the scholars, the discontinuance of regular work, the general relaxation after the strain and high-pressure of class exercises and home preparation, and the prevalent gaiety expressed on the countenance of every friend and acquaintance whom they meet, are the best conditions for such a celebration as we have delineated above. They are scarcely, however, the circumstances under which pupils can, with hope of success, be made to submit to all sorts of questions, relevant and irrelevant (generally the latter), put by persons who know not how to form a question, nor what ought to be the limits of the pupils' knowledge, and who only succeed in bewildering and perplexing them. Nor is this all the mischief that attends upon such an examination. Many an examiner has undertaken to question boys and girls, who had been well taught in the best and highest sense of the word, and, from their inability to competently discharge the duty they had undertaken, they have impressed the spectators with the idea that the teacher is in fault. And how often do we observe that schools and departments are, on such occasions, most unfairly brought into comparison with each other, and thus give rise to heart-burnings, jealousies, and recriminations! Have we not seen clever teachers so conduct the business of the examination day, by only presenting to the visitors what was most attractive, most easily understood, and displayed to best advantage the graces of their pupils, that the more thorough and intellectual work of an abler man, being less easily discerned, was passed over with slight praise, whilst they were overwhelmed with panegyric?

Is it not better, therefore, that show-lessons and teaching generally be dispensed with on these occasions, and that the exhibition proper take their place. It would be more in harmony with the time and the spirits of the scholars and their friends, and be a great relief to the better class of teachers. There would not be the same risk of creating ill-feeling, not the same danger of injustice, whilst a most laudable object would be advanced. And, may we not say that teachers would thus be relieved from the exposure to the temptation to perform their duties with a view to public display, and be enabled to promote the best interests of those committed to their charge, and that without anything approaching hypocrisy or sham?

THE UNIVERSITY OF NEW BRUNSWICK.

The encænia of the University of New Brunswick, on the evening of Thursday, June 21st, was perhaps the most satisfactory that has been held during the sixty years since the university conferred its first degree. As usual, on the celebration of this collegiate festival, the library was crowded to its fullest capacity, and it was observable that in the audience was a fair proportion of visitors from St. John, Westmorland, and other parts of the Province.

But the daily papers have been full of accounts of the evening; of the prizes and prizemen; the orators of the faculty and the alumni; the young graduates, donning for the first time their wide-sleeved gowns and ermine; the old graduates, coming back to renew their memories of their happy life on the hill; interested parents, admiring sisters, learned doctors of the law and the gospel, senators, alumni, and hard-working professors glad of their well earned holiday. This annual scene has made itself familiar to many throughout the Province. It is not necessary here to repeat these details, or place another elaborate story of the university's festival on record. There are one or two points of interest, however, which may be referred to with advantage to the university and to its supporters. We refer chiefly to the inner life of the college, and one finds no mention of it in the current periodicals.

The University of New Brunswick has been passing through a critical period of its life. It has lately been remodelled, to a slight degree, in its outward form, by the change of the curriculum from a three years to a four years' course. Inwardly there has been a greater change at work, and there is an infusion of new life in the college to-day that makes it strong enough to claim renewed attention from the people of New Brunswick.

The senate of the university was certainly fortunate, as well as wise, when it appointed to the professorships of Philosophy and Modern Languages the young men who now occupy those chairs. The substantial compliment paid by Dr. Macrae, one of the degree examiners, to the proficiency of the graduating class in mental science, is the surest evidence of the excellence of the instruction in this department.

The work in English literature and French needs hardly more than its prescribed courses, which appear in the calendar, to speak for it. It is safe to say that no college in America, of the same size, offers better facilities in the English department. In giving the prominence it does to the study of the mother tongue, our college follows the lead of Harvard and the best American universities; and it is to be noted here that neither Oxford nor Cambridge can compare with Harvard in the facilities they offer for the study of English literature, though in the scientific study of the language the mother country still holds the lead.

It is, perhaps, not in the most delicate taste to praise loudly or openly, but we cannot help congratulating the college on having on its staff a teacher of such wide knowledge and thorough refinement, as the gentleman who was secured through President Harrison's friendship with Edward Dowden, the distinguished head of Dublin University. But however excellent his routine work may be, we venture to think, (if we *may* venture to think in public on matters of private concern, though of public importance) that it is in other, friendly and semi-social, semi-scholastic relations, that Professor Stockley is doing most to help the young men under his tuition, and increase the usefulness of the university. He has introduced the custom, common in the universities of the old world, of intimate and friendly meetings between professor and students, at which topics connected with the work of the class are freely discussed with delightful informality, and where the men learn to know their instructor as a fellow-worker with themselves, as a stimulating enthusiast and leader in one or more branches of reading, rather than as a tyrant, crowned with awe, enforced by authority, exercising the powers of an old-time domine, and vending loads of dead knowledge. An invitation often, too, throws these gatherings open to gentlemen of the city who may be interested in the pursuits of the evening.

The success of Dr. Dyde's lectures on Shakspeare, in Fredericton and in this city, forestalls the necessity of criticism on his work. He has proved his title to a teachership of the people's sons before audiences of the people themselves.

These, to the average reader, may seem small things, but to the thinking man they are strong and important influences. They mark the difference between life and death. They foretell an increased intimacy and a more perfect understanding between scholars and teacher. They confirm the good hopes which were held when the university came under its new management a year or two ago.

Anyone who knows anything of the requirements of modern science and its teaching, and who at the same time has had the good fortune to sit for a year or two in Dr. Bailey's lecture-room, knows that if that gentleman should resign his chair it would be simply impossible to secure a man to fill his place. The range of subjects is so great, and the efficiency with which they are here taught is so painstaking and so well abreast of the times, as to be a source of genuine surprise to a student coming here from the great centres of education. But no one man in so broad a field, including so many specialized branches, can really do justice to them all, or obtain the best results.

The natural science department is sadly in need. That is an old cry, and, we fear, a vain one. But certainly nothing can be gained if we stop crying, in the political world at least. One could almost wish that the society of the alumni would band themselves into a salvation army and beat about the ears of the government and people of the Province, with roaring importunity, if only to proclaim, "Great is Diana of the Ephesians." The din might wake a sleeper here and there.

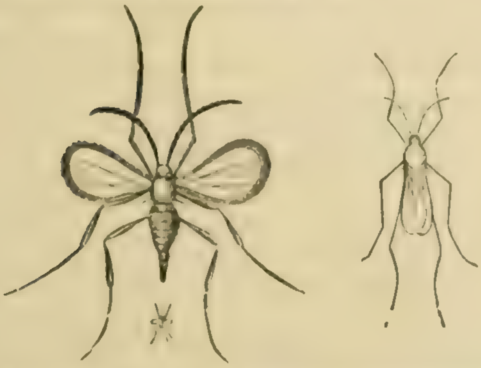
But the alumni have shown that they rightly appreciate merit. By a unanimous vote at the encænial meeting, the society of the associated alumni requested the senate to confer the well deserved distinction of an honorary degree of Doctor of Philosophy on Prof. Bridges. The enthusiastic applause with which the students greeted Dr. Bridges when the degree was conferred, showed how well his manly character and sterling qualities as a teacher are appreciated.

In view of the late somewhat unpleasant and unsatisfactory state of affairs in the university, which threatened at one time its best development, we have thought it important to dwell upon the personal element in the present staff of professors, and to enforce strongly upon the educated and educating portion of the community the recognition of the exceptional advantages our Provincial college possesses at the present time. Never before has it been so thoroughly well equipped with men who are gentlemen, scholarly, painstaking, and successful. Never before has it been so deserving of the increased pecuniary aid whose need it has long so sorely felt. Let us take courage, and aim to give New Brunswick youth an education at home as solid and good as that they may obtain abroad. We cannot hope for a thoroughly appointed university. Let us try to have a really creditable college of arts.

FERNDALE SCHOOL.

No. XIV. The Wheat Midge and Hessian Fly.

(*Cecidomyia* [Diplosis] *tritici*, Kirby;
and *C. destructor*, Say.)



Wheat Midge, *magnified, (real size shown under the one with expanded wings.)*

Teacher. Come up one by one and look at this wheat midge under the microscope. Notice its orange color, its yellowish feet, its transparent wings.

Jack. That is what they call the "weevil."

T. The "weevils" are beetles with long beaks — and there are several different species of them. The local name of "weevil," for the "midge," is incorrect, and therefore misleading.

S. This small fly must have come from a very small cocoon.

T. Yes. About as small as a mustard seed. And now, when the wheat is in blossom, the female on calm evenings can be seen placing clusters of from two to a dozen or more eggs between the chaffy envelopes of the opening flowers. In a little over a week these eggs hatch out as minute, transparent grubs, which draw nourishment from the growing wheat germ, and by the first of August are full grown, nearly an eighth part of an inch in length, and orange. They moult their skins in the ear, but sometimes in the earth, to which they finally descend, then weave their tiny cocoons an inch, perhaps, below its surface.

S. Sometimes these tiny orange specks are very abundant in the dust with the chaff after threshing.

T. Correct. Myriads of moulted skins and of the mature larvæ are taken into the barns in the ears, when harvesting. What should be done with such chaff?

S. It wouldn't do to let it be thrown out on the ground, as the larvæ then could all pupate, and come out as midges next June. Burn the chaff, at least the dusty portion containing the orange grubs.

T. Very good. This midge causes the loss of millions of bushels of wheat each year in America. It is important, then, to know how to treat it.

Jack. If every one in Nova Scotia stopped sowing wheat for one year, what would become of the midges when they would come out of their cocoons and find no flowering ears of wheat?

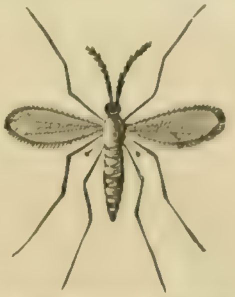
T. They would take to "couch-grass," or "kill-all," which is a species of wheat, and if they did not find enough food, as is very probable, there would be a tremendous midge famine, and very few cocoons for next year. To what order of insects does the midge belong?

Chorus. To the diptera.

T. Yes. And to a group called the Cecidomyidæ, or gall-flies. Have you ever noticed a large cone-shaped cluster of leaves on the end of a willow twig, or large, curious swellings on the young twigs of various plants, or on leaves?

Chorus. We have.

T. Well, very many of these were caused, probably, by some flies of this group, which pierced minute holes through the tender skin of the bud, twig or leaf, with its sting-like ovipositor, and placed eggs in them. This irritation caused the curious growth. And in the midst of the growth, when quite fresh and cut open we can find the young hatched larvæ feeding.



The Hessian Fly (*magnified*).

Here is another of them, which is very destructive to wheat. Hence the name *Cecidomyia destructor*. It was brought over to America in straw by the Hessian troops under Sir William Howe, during the war of independence, 1776. It was first found on Staten Island, near New York, where these soldiers landed, and seemed to proceed inland at the rate of nearly twenty miles a year, destroying millions of dollars worth of wheat.

S. Is it like the wheat midge?

T. Very much; only it is more or less black; the wings also being dark and less transparent.

S. How does it hurt the wheat?

T. The egg is deposited in the angle of the leaf. The larva moves down finally to the joint, where it assumes the form of a flax seed in the pupa state. The supply of nourishment to the ear of wheat is checked, and the straw often breaks at the joints, under the influence of the wind.

S. We do not hear very much about the Hessian fly now, do we?

T. Four or five very minute species of flies are parasitic upon it. They pierce the egg, or the larva, or the pupa, and deposit one of their own eggs in the body. These, in due time, are hatched, and the young larvæ of the parasites feed upon the body of their host, and destroy it. Under certain combination of circumstances these parasites increase with the abundance of their hosts so as even to exterminate the Hessian fly in some localities. There is no remedy so cheap and effective as nature's own.

PRACTICAL BOTANY.

No. V. The Orchids.

"What is an orchid?" said a teacher the other day; "do they grow here?" "How may they be recognized?"

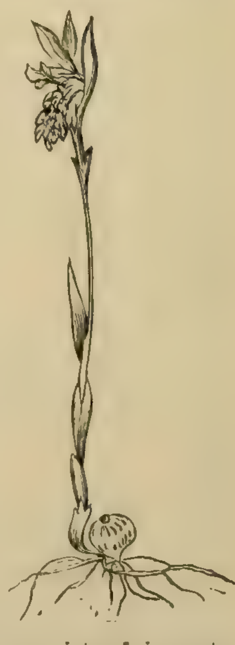
The orchidaceæ is a large and interesting family of plants. They are found in these Provinces. Many of the species are abundant, while others are of rare occurrence. In New Brunswick and Nova Scotia up to the present time about thirty species have been discovered and tabulated. No family of our plants is more attractive or more worthy the attention of students. The different species have so many features in common that when one is made the subject of careful analysis and study, the others may be easily recognized. It may require prolonged and continuous effort to thoroughly master the details of structure of one, but the labor will be rewarded in a life-long enjoyment of the study and occurrence of these wonderfully beautiful members of our flora. Some are so rare that perhaps but few individuals of certain species will be met with in the course of a lifetime, and will have to be sought for in the seclusion of the deep forest. The writer well remembers the delight with which he gazed upon *Calypso borealis* for the first time—one of the most beautiful plants in these provinces, and one which it is safe to say not more than a dozen people here have seen and recognized. In general outline not unlike the plant pictured in this article, its flower is more inflated, like the lady's slipper, and showy, variegated with purple, pink and yellow. It has a single ovate thin leaf, slightly heart-shaped at the base, springing from the bulbous root. It is named after the goddess Calypso, and the name is singularly appropriate, as it means *to conceal*. A prolonged search for the plant last month (it flowers in June), for the purpose of illustrating this article, failed to reveal its whereabouts in haunts where it had been found in previous years (for, tempted by its beauty, it had been taken up bodily and transported to the window-seat, delighting the eyes of friends, and causing the delicately nurtured house plants to grow green with envy while its delicious bloom lasted). Lest one may think we go in ecstasies over this child of the forest, hear what that genial lover of flowers and talented botanist, Prof. W. W. Bailey, says about it:

> Calypso, goddess of an ancient time,
> (I learn it not from any Grecian rhyme
> And yet the story I can vouch is true)
> Beneath a pine tree lost her dainty shoe.
>
> * * * * * * * * *
>
> The tints of purple and the texture fine,
> The curves of beauty shown in every line,
> With fringes exquisite of golden hue,
> Perfect the wonders of the fairy shoe.

A writer on botany many years ago said: "This rare and beautiful plant is found in Vermont, Nova Scotia, Michigan, and west to Oregon." Has it been found in Nova Scotia recently? A well-known botanist there says he has never seen the plant.

Although the first of July is rather late to look for it, it may be found in deep, mossy woods.

But let us look at a few of the difficulties promised above. The plant selected to illustrate this article is one scarcely less beautiful than *Calypso*, but fortunately more common, and may be found in the cold bogs of New Brunswick and Nova Scotia in July and August. Its handsome rose-purple flowers makes it a conspicuous and beautiful object amid the brown earth and duller heath flowers of the barrens. It is from five to nine inches high, springing from a solid bulb. (Most plants of this family have either tuberous or fleshy roots.) The scape, or stem which bears the flower, has two or three little bracts which tightly envelop the stem. The single linear leaf protrudes from its sheath in the scape *after* the plant flowers. The scape of *Arethusa* terminates in one (rarely a pair is found) bright, rose-purple flower. (The flowers of this family are very irregular, borne either single, as in this case, or in racemes or spikes, as in the case of *Spiranthes*; always at the top of the stalk, and each flower subtended by a bract.) The perianth of *Arethusa* consists of six parts, five of these much alike, but the sixth quite different,



The sepals, or the three outer segments of the perianth, and two of the inner segments, or petals, resemble each other. The third petal, or "lip," is recurved at the top and bearded down the face, forming a very conspicuous part of the plant. Adhering to the lower part of this lip is the *column*, composed of a single stamen. (Nearly all orchids have but one stamen.) Enclosed within the perianth, at the base, is the one-celled ovary, which is likewise a characteristic of all our orchids.

The flowers of orchids, with their complicated structure, present admirable arrangements for fertilization by means of insects. It must be taken for granted, what is now generally known, that insects when they creep into flowers for honey, carry about with them from flower to flower the dust or pollen which makes the young seeds grow and become fruitful. The flower of *Arethusa* is admirably adapted for fertilization by insect agency. Dr. Asa Gray has described the process as follows:

"The bee or other insect of considerable size, can enter the blossom only in front; and the large, crested recurving petal offers a convenient landing place." (See cut.) "At the bottom of the narrowed cup of the flower a little nectar is produ͡ced, down to which the insect must reach its proboscis. In rising to escape, its head must strike the lower face of the overhanging shelf, which is stigma, and so sticky that any pollen it may chance to have brought would be left adhering there. As the head slips by, it must next hit the front edge or vizor of the helmet-shaped anther" (just observable in the cut, immediately over the lip), "raise it on its hinge, and so allow one or more of the four loose pellets of pollen to drop out, or be brushed out by the insect's head, to which some of the pollen would stick, and so be carried to the flower of another individual, there left upon its glutinous stigma by the same upward movement which immediately afterward raises the anther-lid and carries away its pollen, to be transferred to a third blossom, and so on."

The flowers of *Arethusa* emit a pleasant fragrance. It is named after one of Diana's nymphs, who was changed by that goddess into a spring. The name was applied by Linnæus, who appears to have been constantly on the watch for analogies, on account of this plant's occurrence in springy places.

[A list of orchids occurring in these Provinces, intended to accompany this article, is unavoidably crowded out.]

THE next eclipse of the moon will occur on the night of July 22. It will take place about midnight.

For the Review.

LATIN SYLLABICATION.

The following notice appeared not long since in a leading American newspaper, and ought to be reliable:

> "Prof. W. Everett, of Harvard University, has resigned his situation because of the introduction of a new Latin grammar. He says he does not know the new Latin and cannot teach it; and that its pronunciation is not only incorrect, but barbarous."

And in the *Princetown Review* of a somewhat recent date, we meet with the following, also on the subject of Latin pronunciation.

> "To say *bonus* and *boni*, and to write verses on the principle that we should say *bonus* and *boni*, is a method of pronunciation of which the wildest savage would see the absurdity. Even a parrot is exempted from repeating sounds which are in direct contradiction to the rules about sounds which in theory it acknowledges."

I do not know what "new Latin grammar" is referred to in the above; but I have seen enough samples of the article within the last dozen years to sympathize with Prof. Everett in the independent and manly protest with which he is credited. The potent considerations, which so often lead to the introduction of new books into schools, seem not to have availed with him; and rather than be unfaithful to the interests of the young men under his charge, he resigned his post. All honor to Prof. Everett.

The *Princetown Review* also deserves much credit for its outspoken condemnation of a grievous evil, which militates almost more than any other against the study of the Latin language, and its use by Latin scholars. But how the writer could be content merely to protest, without recommending or even suggesting a remedy, which must have been obvious to him, is very strange. Did he fear the charge of iconoclasm or singularity, and therefore stopped short in the crusade on which he seemed to have entered with commendable vigor? It is not enough to attack error; one should be prepared to show how it may be removed, and the mischief attending it be nullified.

I do not propose to discuss the subject of Latin pronunciation, and therefore shall say nothing of the two systems on which the vowels are sounded, and which obtain, respectively, in Oxford and the schools of England on the one hand, and of the continent on the other; but the point referred to by the *Princetown Review* may properly claim a brief consideration. The *vowel sounds* are of comparatively little importance, and it may not be possible to arrive at certainty as to how they were uttered by the ancient Romans; but there is no uncertainty with respect to the *quantity* of the syllables and the *accentuation* of the words; Latin verse establishes both the one and the other, and renders ignorance of them inexcusable. It is to the former of these that the *Review* directs our attention.

One cannot but ask as to the nature of the difficulty complained of, and how it came to exist. It is, partly at least, to be traced to the rules of syllabication enacted by certain grammarians and accepted by learners as of unquestionable authority, but which are purely *arbitrary*, and have as little foundation in the structure of the language as they have in reason.

Let us examine this point for a moment from one or two familiar examples. In such a word, for instance, as *caput*, a leading rule would make the first two letters constitute a syllable, and the last three another. This, as we pronounce, would render the *a* of the first syllable *long*, whereas it is *short*. If we would observe the true pronunciation, we must disregard the rule of syllabication, and divide the word between its third and fourth letters. This would make the first syllable short, as it is in Latin verse, which is our only authority for quantity. A like remark would apply to hundreds of similar words, and among them to the two instanced by the *Review*. The grievance or difficulty complained of would seem to be not a very formidable one, for we have seen how easily it can be removed. The common and incorrect pronunciation is expressed by the syllabication *bo-nus, be-ne;* the correct and extremely rare pronunciation, by *bon-us, ben-e*. It need not be mentioned that the quantity is ordinarily exhibited in another manner, that is, by certain signs placed over the vowels in question.

So there is a rule in some of the grammars which discriminates among the accidents of nouns, etc., assigning a different pronunciation to the corresponding syllables of the different cases. Thus, in *navis*, in which the first syllable is *long*, and is so pronounced in the other cases, in the dative and ablative plural we are instructed to give it the *short* sound. The same guides would have us pronounce the antepenult of *amabimus* and *amabitis* as if it was short; whilst in the corresponding syllable of the other forms of the tense they kindly allow us to observe the proper quantity.

From what has been said it will appear how unfounded is the statement so often met with in the grammars, when dealing with this subject, that the accenting of a syllable necessarily renders it long. To so assert argues a confusion of thought remarkable indeed, as the peculiar stress of voice, denominated accent, may fall on any syllable indifferently, whether long or short. The *o* in *dominus* is as much accented as is the *au* in *audio;* and yet in the first case the syllable is short, while in the last it is long. I hope I shall be excused for having adduced such simple and homely illustrations, for the language does not furnish anything less simple and less homely.

The lesson taught by the above is sufficiently obvious. It is, to disregard all rules of grammars or other authorities, which, if followed, would falsify the quantity, or lead to an incorrect accentuation of the words; and for this reason, among others, that it may be so easily known what is the true quantity and accentuation of all Latin words—with the few exceptions of those that are not found in the Latin poets, or whose pronunciation can not be determined by analogy. If this were done there would be no longer the inconvenience and discomfort that attend the babel of sounds with which our ears are tortured by the conflicting systems or usages of discordant schools.

PHILOMATHES.

Wolfville, N. S.

For the REVIEW.]

TO NATURAL SCIENTISTS.

Two years since, the writer was engaged in exploring timber lands on the Bonaventure river, which discharges its waters into the Bay of Chaleur. Early in March, when the snow was four feet deep, we had ascended the river many miles, as its snow-covered surface afforded free scope to our portagers, who were carrying food, bedding and cooking utensils on three toboggans. Everything went smoothly until we came within a mile or two of the Forks; then the ice, which had previously shown no symptoms of weakness, began to give evidence that it was not to be relied on, and finally, when we were, by estimation, from one and a half to two miles from the Forks, we found an open river, whose clear green waters were bounded on either side by white banks of snow. The river was rapid and its waters shoal. On either side there was a small strip of beach. On this we saw a robin or two (*Turdus Americanus*) hopping about and gathering up such food as the bright waters had cast on the shore. There were also a few ducks to be seen. Leaving the river we cut our way through the woods to the Forks, where we camped that night. The left branch we found all open and entirely free from ice. This we crossed the next morning by means of a long cedar which we felled, after which we ascended the right-hand branch, which was solid, a distance of sixteen miles, or so far as we dare, travelling becoming dangerous ; indeed, in many cases we could hear the water roaring beneath the high up-raised shelly ice over which we were hauling our toboggans. But to return to the Forks, where I saw what interested me much: An article whose name I am ignorant of, and only know by the fire test that it was of organic origin. At the Forks, just where the two branches meet, there was a broad, low sand bar. While walking on the shore of this, during the time that my men were carrying our tent and supplies over the fallen cedar, I saw in the stream, the water of which was remarkably clear, patches of a viscous substance attached to the small projecting points of a ledge whose surface was only a few inches below that of the water. From these little projections it was strung out in ropy masses which undulated and vibrated in the quick and rapid water of the stream. Some of it I gathered. It was of a consistence similar to that of calves' feet jelly, perhaps a little harder. It was colorless and transparent. Putting some of it in a handkerchief it became thoroughly dry, when it had a yellowish cast. I tried it with fire, when it proved itself to be of organic origin by the disagreeable fishy odor which it emitted under the action of heat. Can any of the readers of the EDUCATIONAL REVIEW tell me what this was?

EDWARD JACK.

Fredericton, N. B.

For the REVIEW.]

A JAPANESE SCHOOL.

* * * * There is one command not needed here, and that is, "Pay attention." They would consider it very impolite to be inattentive while a teacher is talking, and besides they are so anxious to learn. When the girls become more advanced in their English, teaching them will become a perfect delight. It is a little hard just now, sometimes. Whipping a pupil is unknown here. No teacher would think of doing such a thing. It would be looked upon as a dreadful insult. There are normal schools, with model schools attached, all over Japan. Two of the teachers called upon me and invited me to visit the Shidzwoka normal school, which I did one morning. There are no free schools in Japan, and all normal school pupils are required to board in the building. The school is very large; there are seventeen teachers and 160 pupils, thirty of whom are girls. It has only been the last year that girls were admitted, and then there was a hard fight for it. In Tokio and Yokohama the normal school has been open to girls for some years, but not so in the country. Girls, however, have separate classes, and do not see the boys at all.

All schools have large reception rooms. I was shown to the reception room by one of the school servants just before the bell rang for recess. It was very interesting watching the pupils come out. There was a very large covered play-room, with a balcony running all around it. The pupils from the different departments of the model school march out, each class being preceded by a teacher. It was a very pretty sight. The teacher of the very little ones walked backwards. The order was perfect till they reached the playground, and then there was quite as much noise as any Canadian boys and girls would make. After a little I was conducted to the teacher's room. It is a very large room, fitted up with bookshelves, desks, chairs, ink, paper in pads—everything that a teacher could possibly require. The first room I visited was the library. It was a very fine one, containing a large number of volumes—Chinese, Japanese, English, French, German, etc. The classes in the model school are taught altogether by the pupils, one pupil having charge of one class for a term. Each teacher teaches only one subject. The order was perfect. The scholars in the first room I entered were having a singing lesson. The teacher played on a small organ with his left hand and beat time with his right. The pupils were from eight to twelve years of age, and while in the room I noticed only two pairs of eyes turn from the teacher for an instant to gaze upon the foreigner. In the next room the pupils were having a lesson on morality. When we entered the teacher said a number and immediately all rose, a second number and they moved a little from their seats, a third they bowed, a fourth they moved back again, and a fifth sat down, and then they were no longer conscious that there was anyone in the room but themselves and their teacher. Through all the rooms the same order prevailed.

I would like to say just a few words about the natural history room. It was quite a large room, lined with cases filled with all kinds of stuffed animals, bottles with all sorts of fish, and birds of every kind. The walls of the room in which physiology was taught was completely covered with diagrams of the parts of the human body, and standing up by the platform and directly opposite the students was a skeleton of a human body. This was partly covered with a sheet. The geology room was fitted up with cases filled with specimens of stones from all parts of the world. I could have spent a whole day in the building, instead of only an hour. All the boys' schools are fitted up in the same way.

In the school in which Mr. Cassidy teaches there are four hundred pupils. What delighted me there was the room in which botany was taught. There were such beautifully pressed flowers and vines and leaves. The Japanese have sent men to visit the best schools in Europe and America, and they have been quick to adopt only the best methods of teaching.

The students of all the boys' schools wear foreign dress—I believe they are required to wear it, and the girls, too, in the normal school are adopting it. I think the schools are on the plan of German military schools. The teachers have their coats and pants heavily braided. The boarding departments in all the schools are much alike. Upstairs are the sleeping rooms. Each room contains five rough, plain, narrow wooden beds, and on the walls are guns and swords. Sometimes the boys, having been accustomed to sleep on the floor, tumble out. Down stairs are the studying rooms, each one containing a plain wooden table and five chairs. The goal at which all Japanese students aim is the Imperial University in Tokio. A sister of one of the students attends our Azabor school in Tokio, and he offered one Saturday to take us through the building. We entered the grounds through a massive stone gate, walked through avenues of trees past the museum, which is a large building three storeys high. We were first shown into a reception room, where we were met by the young man who was to conduct us through the building. We first went to the laboratory, then to the designing-room. The ceiling was between two hundred and three hundred feet from the floor. There were hundreds of designs, mostly for engines. I did not know that so many kinds of engines could exist. The third room was filled with models of all kinds of ships—war-ships, steamers, etc., and the walls were completely covered with drawings. We next went into the examination hall. It was perfectly elegant. It consisted of an immense room four storeys high from floor to ceiling, with galleries running round it. It had the most elegant pillars with gold and green stripes. The balconies were sixteen feet wide. The walls consisted of book cases, and round the railings were writing tables and chairs. The railings were iron, but were pure white, covered with green and gold ornaments. The ceiling was beautifully carved, and pure white. There were electric tubes for lighting the lamps. Electric light is used altogether. The stair-ways leading to the balconies were outside, of iron—white, green and gold. The geology room would have pleased Miss Waddell. Of course there were cases and cases and cases filled with specimens, all labelled, in both Japanese and English, and the walls were covered with pictures of stone formations. There was one room containing specimens of woods—mahogany, and every kind imaginable. In one room there were models of all kinds of bridges—but I could not begin to tell all the wonders I saw in that building. I was told that there were no school buildings to equal it in size and beauty in Ontario. The Japanese have thrown off their old religion, and education is their god now. I never imagined anything like the magnificence of their temples. We visited some in Tokio, built more than three hundred years ago, and it must have cost millions and millions of dollars to build them. They have the most elegant designs in bronze, marble, and pure gold. But while there is so much refinement and culture in Japan, there is also much, very much poverty and degradation. Fancy thousands of men doing the work of horses. Some of the people have come to the decision that Christianity is the best religion, that it is well to have a religion, and one of their greatest men in Tokio wrote an article for the papers in which he proposed that some hundreds of the nobility should join one of the Christian churches, and thus gain the respect of the Christian countries of the west. He tells the people that religion is only a garment which men and nations put on to suit their interests. He says if they could only have a religion which would teach the morality of the Bible, and leave out the divinity of Christ, and the miracles, they would be quite satisfied. Although, he says, they need not object to Christianity on that account, for the miracles and this belief in prayer is really needed for the women and the lower classes. Of course no intelligent, educated man would believe such nonsense.

The weather is delightful, birds singing, trees coming into leaf. But although so fine, it is most depressing weather. Everything is so new and so strange. While there are many things to make life pleasant here, there are many things which would make it unbearable, if it were not for the thought that one is really needed here, to show those conceited men that the girls and women are just as clever as they are if they have the chance.

My school is increasing in numbers. I have now forty-two pupils, ten of whom are boarders. The house is full, and the school almost so. I hear that a number are coming after Easter. They are going to build a new school, with accommodation for one hundred pupils, fifty of whom will be boarders. It is marvellous the way they run up the buildings. Mr. Cocking has a new house, two storeys high, and it was built in seven weeks. Of course they are not substantial like the home houses, but they look very pretty. When I speak of foreign dress, I mean the dress worn in America and England. I am a foreigner now, and am quite accustomed to hearing myself called one. Wouldn't I love to go to a church where I could understand what is said. It is pretty hard to have no church privileges at all.

*

Shidzwoka, Japan.

This is the time to commence experimentation with our own Labrador Tea, *Ledum latifolium.*

J. GOULD SCHURMAN, M. A., D. Sc.
(Professor of Christian Ethics and Philosophy, Cornell University.)

There are few men in these Provinces, or connected with them, who are better known than Dr. J. G. Schurman. In academic circles, especially, he is recognized as an accomplished teacher of philosophy and literature. His former students remember him with gratitude and esteem, both for the ability and enthusiasm with which he conducted his classes, and the sympathy and wisdom of his counsels. Educationists recall their regret at the departure to another country of so eminent a teacher, although it was to occupy a position of greater responsibility and wider usefulness, and express their satisfaction at the prospect of being able to listen to him again at the forthcoming Interprovincial Conference of Teachers. Perhaps no feature of the gathering will be so interesting and productive of good results, as the experience of Sir William Dawson, Dr. Rand, and Dr. Schurman, who are acquainted and have been associated with the education of the Lower Provinces, but who come to us now from Quebec, Ontario, and the United States.

Dr. Schurman was born at Freetown, P. E. I., 22nd May, 1854. In 1870 he gained one of the scholarships for Prince County, and entered upon his studies at Prince of Wales College. During the two years of his attendance he was remarkable for the untiring zeal with which he applied himself to his studies; while, to a clear head and great power of concentration, he added extraordinary accuracy and an excellent memory. He left this college to teach the Grammar School, at Harrington. And never shall we forget the beautiful summer day, in 1873, when, at the joint request of the teachers and the trustees, we examined that school. Mr. Schurman had been but a year in charge of it, and yet we considered it then, and must pronounce it still, the best we ever had the fortune to visit. The order was perfect, the children were happy, and all, from the youngest to the oldest, were admirably taught. Here, as has been observed in the case of others who have become distinguished, we found evidence of the possession of the same powers and qualities which have in later years been recognized in Dr. Schurman—unusual tact, sound judgment, unbounded enthusiasm, clearness and accuracy in exposition, good temper, and an unfailing conscientiousness.

He afterwards proceeded to Acadia College. In 1875 he won the Gilchrist scholarship, and thereafter prosecuted his studies, for two years, with great distinction, at University College, London. Having, by this time, determined upon philosophy as his special study, he spent the following winter in Edinburgh, under Professors Fraser and Calderwood, and graduated D. Sc. at the end of the session, 1878, and soon afterwards stood at the head of the list of M. A. in the University of London.

About this time, also, he was elected to one of the Hibbert fellowships, which are tenable for two years. These years were passed in unremitting study in Germany, France, and Italy, under the most eminent professors of philosophy, and in 1880 Dr. Schurman published his "Hibbert Essay" on "Kantian Ethics and the Ethics of Evolution."

In the same year he was called to Acadia College, and occupied for two years the chair of logic, rhetoric, and political economy. Thence he moved to Dalhousie in 1882, being selected as the first occupant of the "George Munro" chair of philosophy and English literature, and there remained, till in 1886 he was appointed Sage Professor of Christian Ethics and Philosophy at Cornell University.

Cornell is now to reap the benefits which Dr. Schurman derived from his six years' residence in Nova Scotia. Constant study and reflection, the knowledge and mastery of his powers, and the experience which he had gained in university work, are now to produce their fruits. He had not long occupied the chair of philosophy till it was felt and acknowledged that speculative subjects were handled in a manner very different indeed from the traditionary dull and repulsive mode of presenting them. His lectures were characterized by freshness and vigor, and attracted his more thoughtful students by their lucidity and force, both in thought and language, while his enthusiasm in his theme overcame the distaste of even the most reluctant to undertake the study of philosophy. His classes increased in numbers and even some of his fellow professors became most attentive listeners. During the present term the interest and zeal in these studies in the universersity has reached such proportions that in response to a petition he delivers a special course on ethics every Tuesday, open to all members of the university. So hearty is the appreciation of this boon that 250 or 300 students crowd the philosophy class-room—many of them standing from lack of room.

During last autumn Dr. Schurman published his "Ethical Import of Darwinism." This work was well received and highly commended by those competent to judge of its merits, and the first edition was exhausted in eight weeks. It exhibits all the excellences which contribute to render Dr. Schurman a great teacher of philosophy, and at the same time is remarkable for the candor and respect with which the opinions of others are stated and criticised. Throughout, the volume is suggestive without obscurity, courageous without flippancy, and modest without servility. When such work has been accomplished by a man only thirty-four years of age, gifted with a magnificent constitution and unlimited powers of application, what may we not be justified in expecting from him in the future.

Though thus fully occupied with the duties pertaining to his classes, and preparations for the press, he has been always keenly alive to all that transpired in the world around him. All educational business, of a nature real and practical, and educators, honest and enlightened, have had his sympathy and encouragement. He is one of those who see and acknowledge that university work, to be truly effectual, must be in touch with human interests and the educational system of which the university is the apex. A man of such sympathies, and so appreciative of the labors of the teachers of the country, a man so capable of giving powerful expression to what he knows and feels, and favored with an experience so wide, and rich, and varied, cannot but have much to say to the Convention well fitted to encourage, cheer and instruct.

In future examinations for licenses in Nova Scotia, the superintendent of education will accept from applicants, instead of the standard spelling, the spelling as amended by the twenty-four rules of the American and English Philological Associations.—*Dalhousie Gazette, May, 1888.*

COLLEGES.

McGill University. We have received the "Annual Calendar" of this university for 1888–9, which gives very full information respecting its numerous faculties.

In Arts, arrangements have been made for matriculation examinations coincident with those for the Associate in Arts, which may be held at local centres anywhere in the Dominion. The Donalda special course for women will be erected into an independent college, in every way equal to the McGill College, with a large endowment and staff. In Applied Science, new class-rooms have to be provided in the east wing, and a new building erected for workshop and machinery. The Medical Faculty, with the highest reputation on the continent, has an additional member added. The Law Faculty is moving into more commodious rooms. The Normal School has also made new arrangements. This university appears to be expanding more rapidly than ever. Its influence, not only on Quebec, but on the Dominion, is great, and specially beneficial.

University of Dalhousie College. We have received the calendar for 1888–9, with the examination papers. The work of the university, measured by this test, will bear favorable comparison with that of some of the leading universities of the continent. In fact a degree from Dalhousie College in Arts means, apparently, more work done than one from some of the famous universities of Great Britain. Although these examinations are hard on the poor student who must "go down," they will eventually secure a universally acknowledged preeminence for the degrees from this university. Many and large money prizes are offered to the students who matriculate most successfully. But the success of its students in winning fellowships for special courses abroad, appear to have even a greater moral effect upon its drawing powers. For last year the attendance of students is summarized as follows:

Faculty of Arts.—Undergraduates in Arts, 86; Undergraduates in Letters, 2; General Students, 56. Students, Art Faculty, 144.

Faculty of Law.—Undergraduates, 38; General Students, 9. Students, Law Faculty, 47.

Faculty of Medicine.—Undergraduates, 14.

Students.—Arts, Law, and Medicine, 205; deduct, studying in more than one faculty, 1. Total, 204.

Acadia College. The closing exercises at Acadia College and Horton Seminary took place as the June number of the Review was going to press. The exercises were of a most enjoyable and stimulating character. The whole number of students attending college during the year was 115.

The twenty-third annual commencement of St. Joseph's College, Memramcook, took place on the 22nd of June. More than usual interest was attached to the occasion, because, for the first time in the history of the college, degrees were conferred. The degree of M. A. was conferred upon Rev. James McDevitt of Silver Falls, Hon. Pierre A. Landry, M. P., of Dorchester, Geo. V. McInerney, barrister, of Richibucto, and Hon. Pascal Poirier, Senator, of Shediac; B. A. on Frank O'Neill, St. Andrews, and Edward L. O'Brien, of Fredericton; B. L. on Daniel E. Corbett, of Milltown. The exercises were of a highly interesting nature.

SCHOOL AND COLLEGE.

St. Francis Xavier College, Antigonish, is enlarging its accommodations this summer.

Acadia College is extending its already fine Convocation Hall, to accommodate the anticipated attendance at its forthcoming jubilee celebration.

King's College is having further changes made in the *personnel* of its teaching staff.

The Summer School of Science, Nova Scotia, will open in the Pictou Academy Convocation Hall, July 23rd. It is hoped that Sir Wm. Dawson may be present at the opening. Reduced fares are obtained on all railways and important lines of steamers from New Brunswick to Cape Breton.

Mount St. Vincent Academy held its fourteenth annual closing exercises on June 22nd. His Grace, Archbishop O'Brien, Dr. Allison, Supt. Education, the Attorney General, Stipendiary Motton, Supervisor McKay and other distinguished visitors were present, and spoke in words of high praise of the institution. It has been decided to add another brick and granite wing to the building—to cost about $35,000.

The Convent of the Sacred Heart, Halifax, closed on June 28th. His Grace the Archbishop, Supervisor McKay and a number of other visitors were present. A very superior programme was gone through, a great number of prizes presented, and congratulatory addresses made by the visitors. In addressing the pupils, His Grace said: "Although living in relative seclusion, year by year, the grand work of training minds in literature and science, of developing character by high principles of conduct, of forming manners to refinement and elegance, and of moulding hearts to a lofty ideal of Christian perfection had been going on here in quietness and almost obscurity."

The Convent of Stella Maris, Pictou, closed with a grand bazar for the benefit of the institution. It was held on the 2nd, 3rd and 4th of July, and was highly successful.

PERSONAL NOTES.

J. S. Trueman, B. A. of Dalhousie College, has been awarded a classical fellowship in the Johns Hopkins University. Mr. Trueman is a native of Carleton, St. John, and won the corporation gold medal for classics at the St. John Grammar School in 1875. Since that time he has been a constant student of the ancient classics.

Mr. James E. Creighton, a graduate of Pictou Academy and Dalhousie Colleges, and a native of West River, has won one of the eight fellowships awarded by competitive examination in Cornell University, New York. Mr. Creighton won the fellowship in philosophy out of a class of thirty candidates. This is worth $400 a year, and good for one year at the least.—*E. Chron.*

Humphrey Mellish, Esq., B. A., mathematical master in the Pictou Academy, has tendered his resignation to take effect Oct. 31st. He is to complete his course at the Law School, Dalhousie College.

Inspector Lay, with indefatigable zeal, has made arrangements to hold a natural science institute in Amherst on Thursday and Friday before the teachers' examinations.

Under Professor Coldwell the scientific students of Acadia made their customary annual expedition in the Schooner *Ocean Bird*, visiting the wide famed mineralogical localities on the shores of the Basin of Minas.

Mr. John Montgomery, the efficient principal of the Albert School, Carleton, is at present on a visit to the north of Ireland. Mr. Montgomery has been connected with the schools of Carleton for over a quarter of a century, and in that time has witnessed great advance in educational methods, in which he has steadily kept pace.

Mr. D. H. Burbidge, principal of the Morris Street School, Halifax, has been for some time unable to attend to his duties through severe and protracted illness. We are glad to learn, however, that he is becoming convalescent.

QUESTION DEPARTMENT.

Questions and Answers.

A. C. M. L.—Please comment on the following passage:

> " He had safe conduct for his band,
> Beneath the royal seal and hand."

The passage is elliptical. The sense is: He was provided with a passport, given under the royal seal and hand, affording safe conduct to his band. "Beneath the royal seal and hand" is a participial phrase, joined to "safe conduct."

R W.—Please find in this tin box which I send, cocoons of insects, which name and describe in EDUCATIONAL REVIEW.

Your box when opened contained a number of the chrysalids of *Pieris,* the cabbage butterfly. Left in a warm place for a few hours, and again opened, it contained, apparently, in addition, a large number of minute, four-winged flies. On examining the chrysalids every one was found nearly an empty shell with a small round hole bored through it, out of which came the parasitic hymenopterous flies. A species of ichneumon fly deposited its eggs on the caterpillar, or on the chrysalis, and the larvæ when hatched fed upon the vitals of their host, pupated, and finally emerged as the four-winged flies, eager to proceed to the extermination of any remaining cabbage caterpillars to be found.

J. M.—1. Please give the name of tree from which enclosed leaves were taken, in next issue of REVIEW. 2. Is the other enclosed leaf *Ledum latifolium*?

1. *Populus Alba,* sometimes called the "Abele Tree," and "White Poplar." 2. It is.

M. McN.—1. In case Queen Victoria outlives the Prince of Wales, who will next succeed to the English throne?

Prince Albert Victor of Wales.

2. The following stanza is taken from the Fifth Royal Reader:

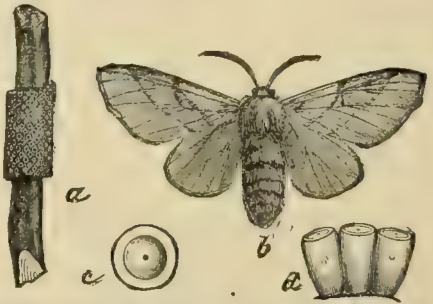
> " And yet, fair bow, no fabled dreams—
> But words of the Most High,
> Have told why first thy robe of beams
> Was woven in the sky."

Was the *rainbow* seen first after the flood, as the poet puts it, or was it seen before, as well? Would it be contrary to the account given in the Bible to suppose that it had been seen before the flood?

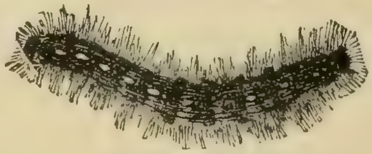
There is nothing in the Bible to show that sunbeams shining upon raindrops in antediluvian times would not produce the phenomenon of a rainbow to a person properly situated, as at present. The rainbow, however, was not pointed out as a pledge of no further universal deluge, according to Genesis, until after the flood. The appearance of the rainbow is always a positive, unfailing proof of a breach, somewhere in the canopy, of the storm clouds.

B. E. Z.—What are the "bunch caterpillars" which, according to the papers, are stripping the leaves of the orchards in Annapolis County?

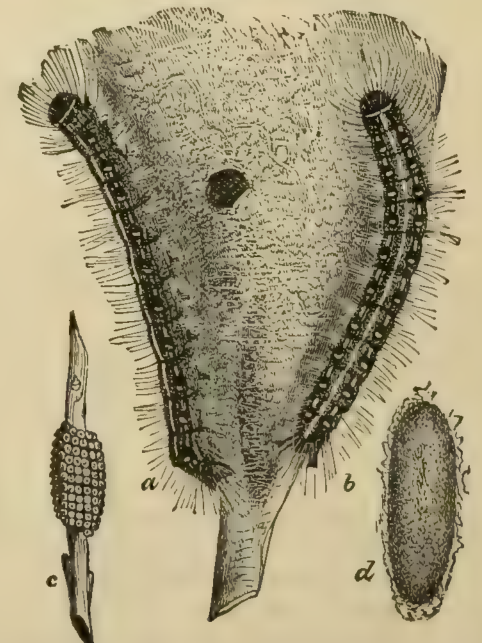
We have not seen a specimen yet; but from their described habit of bunching we presume they may be either the "American" or the "Forest Tent" caterpillars. We give their figures, so that those interested may be able to decide for themselves. A full account of them is given in "Ferndale School, No. 3," in the REVIEW of last August.



Eggs and Moth of *Clisiocampa sylvatica* (the Forest Tent Caterpillar). *b* The Moth. *a* The Eggs laid in a ring around the twig of the tree the previous Fall. *c* End view of Egg, magnified. *d* Side view of three Eggs.



Larva, or Caterpillar, of the same.



Clisiocampa Americana (the American Tent Caterpillar). *c* Ring of Eggs. *a* and *b* Larvæ on cobweb tent woven over the fork of a branch. *d* the cocoon, which is much like that of *C. Sylvatica.*

The moth of *C. Americana* is also like the other, of a pale reddish brown color, only the bands across the fore-wings are whitish, instead of dark brown, as in the first. Some of the caterpillars will now be wandering away to sheltered crevices to weave their cocoons; and in about two or three weeks thereafter, the moth will be on the wing. Our readers may perhaps be so kind as to report if either of these caterpillars is present in their district.

H. G. W.—What is the correct name of the enclosed specimen, which was brought to me by a scholar, who thought it might be the codling moth?

Papilio turnus — the "Swallow-tail" butterfly. For full description, with cut of the *imago* and *larva* of this butterfly, see EDUCATIONAL REVIEW, Vol I., No. 6 (November, 1887).

W. R. G.—D F. McD. was cutting this stick yesterday, and noticed the living *borer* in it. He gave it to me in Port Mulgrave to bring to you. The stick came to Mulgrave from Calcutta. The "critter" has bored his way more than one-sixteenth of an inch down since yesterday noon.

The stick is of the size of a stout cane, with the bark on, of a wood suggesting our *Amelanchier* in appearance. Where the stick was sawn off for the head of the staff, two burrows of a borer were cut across, the smaller one, nearer the bark, packed solid with wood powder, the central one exposing a larval wood borer. It is smaller than the apple tree borer, *Saperda candida*, described in the October REVIEW. Nor is it our common flat headed borer, *buprestis*. Many boring larvæ remain two and three years boring in the heart of a tree before assuming the *imago* form—as the beetle. The most surprising point in this case is that the larvæ survived in an active condition within a dead, sapless piece of wood, which came around more than one-half of our globe.

N. A. B.—I send you a peculiar specimen, found in the leaf of a pitcher-plant. Is it a chrysalis, or is this piled-lumber looking case its natural covering?

Your two specimens are the *larvæ* of a species of the family *Phryganeidæ*, one of the families of the Neuroptera. The larvæ are popularly known as the Caddis, or case-worm. They construct tubes of bits of sticks, sawdust, grains of sand, etc., and live under water, feeding on vegetable matter, water fleas, and smaller aquatic larvae. Its six articulated feet show that it belongs to the insecta, and not to the tubicolous worms. It closes its case when about to pupate. The imago bears a closer resemblance to the moths than do the larger members of the order, the dragon flies.

J. M. S.—Your plants are: No. 1, *Amelanchier Canadensis*, var. *Botryapium* (?); No. 2, *Cassandra calyculata*; No. 3, *Nemopanthes Canadensis*.

LITERARY NOTES.

In the transactions of the Royal Society of Canada, recently published, is a valuable historical paper, accompanied by a map, illustrating Cartier's first voyage to Canada. The writer is Mr. W. F. Ganong, A. M., of Cambridge, who turns aside from his biological studies to give us a most important contribution to Canadian history. We shall publish a digest of the article in the August issue of the REVIEW.

Miss McCready, of Wellington Row, St John, won the prize of $10, offered by the *British American Citizen*, of Boston, for the best written description (not exceeding 300 words) of any watering place in New Brunswick or Prince Edward Island. Her essay was on Dalhousie.

Attention is directed to the announcement made in another column, by the publishers of *Wide Awake*, Boston. A good opportunity will be furnished by teachers and students during the holidays to search out materials for such sketches.

Signor Crovato Giovanni, of Vicenza, Italy, a Professor of Volapuk, is making a collection of post-cards, written in the new language, from all parts of the world, to be exhibited at the International Exposition to be held at Vicenza. A correspondent of the REVIEW, who sent him a Volapuk card from Fredericton, has recently received his reply, in which he requests him to ask his friends who can do so, to send him post-cards written in the world-speech. A two cent card of the "Universal Postal Union" will go to Italy, or almost anywhere. Volapuk students in the Maritime Provinces are requested to write to Box 49, Fredericton, N. B.

The authors of arithmetics are very numerous, each giving the results of his own valuable experience; but when three hundred prominent teachers unite in compiling a book for the class-room, it should be especially practical in character and select in matter. Exactly such a book is "The New Arithmetic," just published by Messrs. D. C. Heath & Co. It is essentially a pupil's hand-book, compact, yet complete, and prepares for the computations of everyday life.

BOOK REVIEWS.

NOTES ON EDUCATION: A practical work on method and school management, by J. B. Calkin, A.M., Principal of the N. S. Normal School. D. H. Smith & Co., Publishers, Truro, N. S. This is a compact and neatly printed volume of 300 pages. The author states in the preface that it has been prepared more especially for the use of normal school students, but the experienced teacher cannot rise from a careful perusal of its pages without feeling that he has been greatly benefitted by it. All teachers know how important it is occasionally to pause and put themselves and their methods to a rigid examination; to discard what is merely formal and commonplace from their routine work, and to bring to it more freshness and originality by this self-examination and an inquiry into the nature of education. Mr. Calkin has admirably met this need, by publishing his "Notes," which are intended rather to be suggestive, than complete expositions of educational methods. Although he claims that he has not aspired to invent a "new education," every page in his book shows that he is thoroughly imbued with the spirit of the new education, if we mean by that the practice of those great principles of *natural* education which profound minds in all ages have evolved. Every teacher is called upon to deal with brilliant and dull minds, and yet every one has not been fully impressed with this thought, which the author so forcibly places before his readers: "The knowledge acquired by a certain effort may be forgotten, and yet the power resulting from that effort may remain a permanent possession. Again, much knowledge may be gained through such outside help as to involve little mental effort on the part of the learner, and hence be accompanied with little mental growth. Mental exercise is the one essential condition of development." The admirable plan of the book, containing suggestions on almost every conceivable subject with which the teacher is called upon to deal, makes it a valuable adjunct to the teacher's library, and many will have cause to thank Mr. Calkin for publishing his "Notes," which suggest so much that his active, useful life has enabled him to verify. Messrs D H. Smith & Co. have well performed their part of the work, in producing a volume, neat, compact, and with clearly printed pages.

Chemical Problems, by J. B Grabfield, Ph.D., and P. S. Burns, B.Sc , Massachusetts Institute of Technology, Boston, Mass., U. S. A. Boston, D. C. Heath & Co., 1888. This is a capital little book of about ninety pages. For the student it is a superior course for laying a good mathematical foundation for his knowledge of the science. For the teacher it will be an invaluable selection of class problems and examination questions. The following headings of sections will give an idea of its scope: 1, Volumetric Interpretation of Symbols; 2, Percentage Compositions; 3, Molecular Formulæ from the percentage Composition; 4, Expansion of Gases; 5, Volume and Weight of Gases affected by Pressure; 6, Relation between Weight and Volume of Gases; 7, Quantitative Problems; 8, Atomic Determinations; 9, Method based on the Molecular Weight; 10, Method of Specific Heat; 11, Method of Isomorphism; 12, Molecular Weight Determinations; 13, Atomic Weight of the Elements; 14, Reaction; 15, Thermo-Chemistry; 16, Solution and Hydration; 17, Solution of Solids in Water; 18, Neutralization; 19, Heat of Formation and Solution of Compounds; 20, Annual Examination Papers; 21, Condition Examination Papers; 22, Semi-Annual Examination Papers; 23, Intermediate Examination Papers; 24, Metric System Tables.

The following books have been received and will be reviewed next month: "Civil Service Question Book," C. W. Bardeen, Syracuse, New York. "Army Examination Papers, 1882–7," London, MacMillan & Co., and New York.

EXCHANGES.

The Century for July has many admirable features appealing to the intelligent reader everywhere. It opens with an article, "Sinai and the Wilderness," profusely illustrated with scenes of Bible events. Mr. Kennan continues his wonderfully interesting article on Siberia, describing the steppes of the Irtish. Those who suppose that Siberia is a land of ice and desolation will be surprised at his description of the flowery country through which the route of his expedition lay. The article on "Bacteria" is admirable for its illustrations and the clearness and comprehensiveness with which it is written. The editorial on a "New Branch of an Old Profession" shows the rewards now opening for the scientific teacher of manual training.... *St. Nicholas*, (published also by the Century Co., New York,) is full of interesting and timely contributions for young people.... The *Popular Science Monthly* for July, (published by D. Appleton & Co., New York,) is a more than usually excellent number of an excellent series. Among the interesting articles are, Safety in House Drainage, The Teaching of Psychology, Lines of Progress in Agriculture, Botany as it may be Taught, Manual of Industrial Training, with instalments of articles on current literature, science, and art.... *Education*, published monthly, under the editorial management of W. A. Mowry, Boston, is an admirably conducted magazine, and is especially adapted to the wants of the primary teacher.... The *Illustrated London News* for June 30, contains interesting articles and illustrations on M. DeLesseps and the Panama Canal... *Forest and Garden*, published by D. A. Munro, New York, grows more interesting with each number.... The *Scientific American* has admirably illustrated articles each week on subjects of scientific and popular interest. The number for July 7th begins the 59th volume of this widely circulated and useful magazine.

INTERPROVINCIAL CONVENTION.

Notice to Visitors.

The following is a list of hotels and private boarding-houses in St. John. Intending visitors to the Convention will do well to correspond with the proprietors and secure accommodation before their arrival. Those who may fail to secure accommodation would do well to report to the Local Committee, who will meet them in the directors' room of the Mechanics' Institute, at the close of the public meeting on Tuesday evening; or applications for rooms may be made to G. U. Hay, Secretary to Committee, on Monday or Tuesday before the Convention meets.

List of Hotels.—Royal, $2.50 to $3.00; Dufferin, $2.50—$3.00; Victoria, $2.00—$2.50; New Victoria, $1.50—$2.00; Park, $1.50—$2.00; Clifton, $1.50 per day. Elliot's, Bangor, Ottawa, Nova Scotia, Hawarden, Central, Queen, each, $1.00 a day.

The following is a list of private boarding houses, with address. The number attached shows how many may be accommodated in each. Terms, $1.00 a day. Miss Hastings, 40 Elliot Row, 4; Mrs. D. S. Curry, 40 Leinster street, 8; Mrs. Dennet, 49 Sydney street, 6; Mrs. Cowan, 78 Sydney street, 6; Ferguson House, 84 Princess street, 12; Rev. Mr. Shaw, 75 King street, 6; Mrs. D. Merritt, corner Germain and Union streets, 2; Mrs. Chapman, 136 Carmarthen street, 2; Miss Lyons, 138 Carmarthen street, 2; Mrs. Williams, 268 Germain street, 8; Miss Lizzie S. Read, 56 Carmarthen street; Mrs. McKiel, Adelaide Road, Portland, 4.

A CONVENTION

—OF THE—

TEACHERS OF THE MARITIME PROVINCES

OF CANADA,

Will be held in St. John, commencing on Tuesday Evening, July 17th, and continuing during Wednesday and Thursday.

On Friday there will be an Excursion to Fredericton and Return.

Arrangements are being made for reduced fares on all railroad and steamboat lines.

The general meetings of the Convention will be held in the Hall of the Mechanics' Institute, St. John. Meetings of Sections will be held at places designated at the time of the Convention.

PROGRAMME:

Tuesday, July 17.

A meeting for organization will be held in the Hall of the Mechanics' Institute at 7.30 p.m., when the officers of the Convention will be elected.

A Public Meeting at 8 p.m. will be presided over by Mayor Thorne of St. John, and addresses will be delivered by citizens of St. John and Portland.

Wednesday, July 18.

MORNING SESSION.

The Convention will assemble at 9 a. m., when the teachers of the different Provinces will enrol themselves with the assistant secretaries for the Provinces.

At 10 the Convention will be formally opened by an address from Sir Wm. Dawson, President of McGill University, Montreal, to be followed by addresses from J. G. Schurman, D. Sc., of Cornell University, and Prof. Ray Greene Huling, Secretary of the American Institute of Instruction, New Bedford, Mass.

AFTERNOON SESSION.

At 2.30 p.m. an address will be given by Dr. J. G. Fitch, the well known educational author and lecturer, of London, England, on "Hand-work and Head-work in Schools," followed by Col. Francis W. Parker, of Cook County Normal School, Illinois—the subject to be hereafter announced. Addresses will also be delivered by Superintendent Crocket of New Brunswick, and Superintendent Montgomery of P. E. Island.

EVENING SESSION.

At 8 p. m. there will be a discussion on "The Influence of the College on Industrial and Social Life," by President Rev. Dr. Sawyer, of Acadia College, Dr. Harrison of New Brunswick University, Rev. Dr. Forrest of Dalhousie University, Dr. Inch of Mt. Allison University, Dr. Anderson of Prince of Wales College, and by Prof. Roberts of Kings College, and others.

Thursday, July 19.

The Convention meets in sections, at 9 a. m.

Section A.—Normal Schools. The following topics will be discussed: by Principal Anderson, of P. E. Island, "Scholarship as a Preparation for Teaching;" Principal Calkin, of Nova Scotia, "The Relation of the Normal School to the Subjects Taught in the Common School;" Principal Mullin, of New Brunswick, "The Relation of the Model School to the Normal School."

Section B.—Inspectors of Schools. Topics: "The Inspector a Necessary Factor in a Public School System;" to be discussed by Inspector Condon and Roscoe. "The Relation of the Inspector to the Teacher and the District;" by Inspectors Carter, Smith and Mersereau. Another subject will be discussed by Inspectors Arbuckle, Cain and McSwain.

Section C.—High School. Topics: "Science in the Curriculum," by Principal A.H. MacKay, of Pictou; followed by Principal Mackay, of New Glasgow, on Physics," and A J. Denton, Halifax, on "Chemistry." "The Study of Plant Life," by Geo. U. Hay, St. John; followed by John Brittain, Principal of Petitcodiac schools, on "Methods in Zoology;" "Literature," by Principal Cameron, Yarmouth, followed by W. Campbell, Truro, on the same subject.

Section D.—Common School. Topics: "Aims and Processes of Moral Culture," by A. W. Hickson, A.B., Portland, followed by Geo. E. Robinson, P. E. Island. "Physical and Moral Culture in the Play Ground," by W. T. Kerr, Woodstock., "Moral Influence of School Ornamentation," by Geo. J. Oulton, Dorchester. "Moral Culture," by R. H. Campbell, P. E. Island, followed by L. A. McKenna, Halifax, and John A. Matheson, P. E I. "Grammar in the Common School," by D. H. Burbidge, M. A., Halifax, followed by John D. McIntyre, P. E. I., and Geo. T. Miller, Hantsport, N. S.

Section E.—Primary School. Topics: "Kindergarten methods in the Primary Schools," by Miss Lewis, Truro. "Social Instincts as a Factor in Character Building," by Miss Sullivan, Halifax. "Character Building on its Moral Side," by Miss Murphy, Portland, St. John. "Faults of Temper, and How to Treat Them," by Miss H. Adams, St. John.

AFTERNOON SESSION.

Address on Agricultural Education by Prof. H. W. Smith, of the N. S. Normal School.

Address on the methods of the Berlitz Schools of Languages, by Monsieur Vitrain, of Philadelphia.

Address on the Delsartian School of Expression, by Mrs. F. W. Parker, of the Cook Co. Normal School, Illinois.

Address on Art Education by Miss Harriet C. Magee, of the Oshkosh, Wisconsin, State Normal School.

EVENING SESSION.

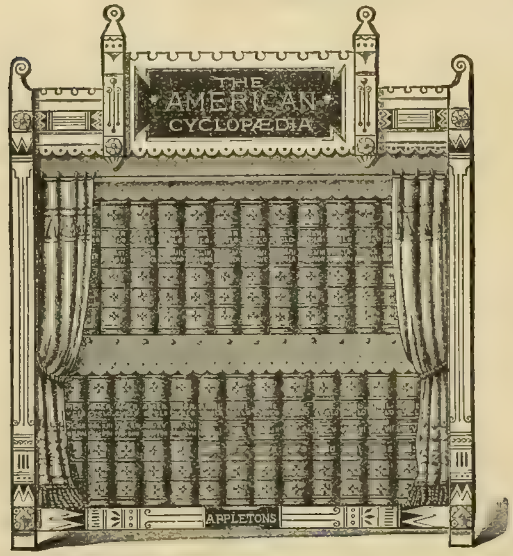
Public meeting at 8 o'clock, presided over by Sir Leonard Tilley, at which addresses will be given by Sir Wm. Dawson, Hon. Justice King, Chief Supt. Allison, Hon. W. S. Fielding, Premier of Nova Scotia, Hon. A. G. Blair, Premier of New Brunswick, Hon. Mr. Sullivan, Premier of P. E. Island, and L. H. Davies, M. P., of Charlottetown.

Any persons may become members of the Convention by enrolment and payment of the fee of one dollar.

SCIENCE. The following **New Text Books** are sure to be of interest to every LIVE TEACHER. We will send postpaid for the following introduction prices:

Shaler's First Book in Geology. For lowest class in high school or highest class in grammar school,	$1 00
Shaler's Teacher's Edition of Geology. Adds 74 pages to the above, for teachers' use,	1 00
Shaler's Illustrations of Geology. 25 photographs (15x20 inches) and 25 colored plaster models,	100 00
Shepard's Inorganic Chemistry. Descriptive and Qualitative; experimental and inductive; leads the student to observe and think. For high schools and colleges,	1 12
Shepard's Laboratory Note Book. Blanks for experiments; tables for the reactions of metallic salts and pages for miscellaneous matter. Can be used with any Chemistry,	35
Chute's Practical Physics. Intended as an aid in high and preparatory schools in the study of physics experimentally,	
Remsen's Organic Chemistry. An Introduction to the study of the Compounds of Carbon. For all students of the pure science, or of its application to the arts, medicine, etc.,	1 20
Coit's Chemical Arithmetic. With a Short System of Elementary Qualitative Analysis. For high schools and colleges,	50
Grabfield and Burn's Chemical Problems. For colleges, high and technical schools,	75
Colton's Practical Zoology. Aids the student in getting a clear idea of the animal kingdom as a whole, by the careful study of a few typical animals,	$0 80
William's Modern Petrography. An account of the Application of the Microscope to the Study of Geology,	25
Clarke's Astronomical Lantern. Intended to familiarize students with the constellations by comparing them with fac-similies on the lantern face. With seventeen slides,	4 50
Clarke's How to Find the Stars. Accompanies the above and aids the beginner in becoming acquainted with the constellations,	15
Guides for Science Teaching. For instructing classes in Natural History. Hyatt's About Pebbles (.10); Goodale's Few Common Plants (.15); Hyatt's Commercial and Other Sponges (.20); Agassiz s First Lessons in Natural History (.20); Hyatt's Corals and Echinderms (.20); Hyatt's Mollusca (.25); Hyatt's Worms and Crustacea (.25); Crosby's Common Minerals and Rocks (.40; cloth 60); and Richard's First Lessons in Minerals (.10).	

D. C. HEATH & CO., Publishers, Boston, Mass.



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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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EDITORIAL NOTES.

THE editors of the REVIEW have been enjoying, in common with other teachers, a short vacation, and in consequence this number is later than usual. The next number will be issued between the sixth and tenth of September.

THE receipt of the telegram conveying fraternal greetings from 5,000 teachers at San Francisco to the 500 teachers assembled at St. John created a profound impression. It was read at the last evening of the convention amid great applause.

"WHERE is Colonel Parker?" was the question often asked at the San Francisco Convention. Well, to use the Colonel's own words, he wanted some of our fish, and he journeyed this way. And we hope Mrs. Parker and he will come again.

DR. RAND, in a letter dated London, July 9th, says: "You will not have been more disappointed, I am sure, of my inability to be with you at your educational conference than myself. In fact, the only real regret I experienced in coming over here this summer was in being obliged to forego a reunion with old friends in the educational service in New Brunswick, for all of whom I cherish great respect, and for many of whom I feel sincere affection."

A NOTABLE incident at the recent convention occurred when Dr. Allison called upon those present at the Educational Institute held at Wolfville, N.S., in 1850, to rise. The following gentlemen responded: Hinkle Condon, Inspector of Schools for Halifax city and county; J. B. Calkin, Principal of the Nova Scotia Normal School; Jas. H. Munro, Inspector of Schools for Yarmouth and Shelburne, N. S.; and A. McN. Patterson, Principal of Acadia Villa Seminary, Lower Horton, N. S.

A QUORUM of the governors of Kings College, Windsor, have attempted to force the resignation of their able and scholarly President, Rev. Canon Brock, for having expressed himself in accordance with the bishop and synod of the Episcopal church of Nova Scotia, to the effect that consolidation with the university of Dalhousie would best advance the true interests of Kings and the Episcopal church.

"* * * * * * Lectures explaining and popularizing entomology are found to be always acceptable before natural history societies in all parts of the country, and in the EDUCATIONAL REVIEW, a monthly magazine published in St. John, N. B., a most excellent series of illustrated popular articles is appearing from the pen of A. H. MacKay, of Pictou, N. S. These are in the shape of addresses to an imaginary class at "Ferndale School," and from their simplicity and accuracy will certainly be intelligible to all and give much instruction. From this it will be seen that anyone now-a-days who wishes to obtain knowledge concerning injurious and beneficial insects can do so with very little trouble."—*James Fletcher, F.R.S.C., in Presidential inaugural, 1887, Entomological Society of Ontario.*

SEVERAL articles of interest have been unavoidably crowded out of this issue. They will appear next month.

In the next issue of the Review we shall begin a series of papers on primary work in schools, and trust henceforth to make these columns invaluable to teachers of every grade.

We are indebted for some of the abstracts of the convention proceedings, to the daily press of St. John, especially the *Sun*, which published a very full and accurate summary of the meetings.

A compliment to Acadia College from the wise men of the east: At the Science School, in Pictou, the three chief officers of the Nova Scotia Summer School of Science elected, namely, the President, Vice-president and Secretary-Treasurer, are alumni of Acadia.

As the circulation of the Review is rapidly increasing we wish to make it the medium of communication between all classes of educational workers. To do this more effectively in future a page will be set apart in which may appear official notices from superintendents, inspectors and other school officers; notices of educational meetings to be held; in addition to other items of interest. We shall take it as a favor if those interested will contribute, and make this page of the Review as full and general as possible.

The Mt. Allison institutions open August 30th. The attendance of students for the coming year promises to be large. Nothing more fully shows the determination of those to whom is intrusted the welfare and management of these institutions to make them thoroughly progressive than the arrangements that have been made to have certain useful arts included in the curriculum. Rev. Principal Borden, of the Ladies' Academy, has shown that he is desirous of meeting the progressive spirit of the age by incorporating shorthand and typewriting in the college course. In the Male Academy, presided over by Principal Davis, instrumental music, shorthand and typewriting have been added to the course. Meeting the requirements for a broad and liberal education as fully as they do, the Mt. Allison institutions were never so completely equipped as at present.

This number of the Review is pretty fully taken up with the report of the proceedings of the late convention. In the September number the admirable address of Dr. J. G. Fitch on "Hand-work and Head-work in the Public Schools" will be given in full, with a digest of the remainder of the proceedings. After that will be published some of the papers read before the sections. Thus we hope to give a full and accurate account of this great meeting. Those who are not subscribers to the Review would do well to send in their subscriptions at once in order to secure the reading of the excellent and practical addresses given at the convention. It is doubtful whether the proceedings will be published in pamphlet form, and teachers would do well to secure the Review and have it sent regularly to them. A few copies for June and July are still on hand enabling those who wish to begin with number one of the second volume.

The Nova Scotia Summer School of Science held a most delightful and successful fortnight at Pictou. The attendance all told was nearly double that of the previous year, numbering over eighty. The hospitality of Pictou town was beyond precedent—in the history of the school. The first examinations of the school were held here, and the first certificates were granted. We must hold over a fuller report until our next issue. Parrsboro, Cumberland Co., N. S., has been provisionally selected as the locus for next year. The officers for 1889 are: *President*, Professor F. H. Eaton, A. M.; *Vice-president*, Inspector C. W. Roscoe, A. M.; *Secretary-Treasurer*, Professor J. B. Hall, Ph. D.

Eight certificates were granted to those passing in at least *three* subjects. No student can pass on a knowledge of text-book work alone, however extensive, as it counts generally only about 33 per cent. About 66 per cent is given for the practical or experimental work required. The following are the first certificate winners:

Principal Kennedy, Halifax, (chemistry, mineralogy, geology, physics). Principal King, Wallace, (zoology, botany and chemistry). Principal Porter, Yarmouth, (zoology, botany and mineralogy. Principal Ida Creighton, Halifax, (botany, chemistry, physics). A. L. McKenna, Dartmouth, (chemistry, physics, physiology). J. H. McMillan, Pictou, (chemistry, physics, physiology). Miss M. J. McPhee, Antigonish, (botany, chemistry and physics). A. D. Williams, Goldenville, (mineralogy, physics, physiology.

Mr. Josiah Wood, M. P., has offered a prize of $25.00 for the best essay on the history of eastern Westmorland County. We notice in the closing exercises of the Woodstock schools, prizes were offered for essays on the history of Carleton County. No better plan could be devised for collecting and arranging systematically materials for local history, which in the lapse of time will grow more and more valuable.

The St. John Shorthand and Typewriting Institute has been incorporated with the Business College. Mr. Kerr is to be congratulated on his enterprise in promoting practical education.

THE last two days of the term before vacation, a Teachers' Natural Science Institute, under the charge of Inspector Lay, was held in Amherst. Principal King, of Wallace, graduate of the Nova Scotia School of Agriculture and Science, took charge of the entomological section. Forty or fifty teachers of the inspectorate attended. In general educational activity Cumberland County seems bound to lead. We regret to have received no synopsis of the work of the Institute.

THE financial support of the Truro kindergarten in affiliation to the Provincial Normal School is assured, we are informed. This consummation is one which we hope to see resulting in great benefit to primary education throughout the whole country. To the intelligent zeal and unflagging energy of Mrs. Condon, President of the Nova Scotia Frœbel Institute, is this grand step in our educational career principally due. Let us now utilize, to its fullest extent, and with as much promptness as possible, the new advantage within our reach.

THE INTERPROVINCIAL CONVENTION.

If the satisfaction which springs from success be regarded as a sufficient reward, the committee who had in charge the arrangements for the teachers' convention ought to feel amply recompensed for the time and pains they so freely expended to secure a happy result. The good sense which characterized their proceedings prior to the meetings was only equalled by the order and precision with which the programme was carried out. To bring together five or six hundred teachers from all parts of these provinces was not perhaps so difficult a matter as to maintain their interest and secure their sympathy throughout, and to send them home full of the consciousness that they had not journeyed in vain, but that it was good for them to meet with their brethren, and listen to the words of wisdom and inspiration which fell from the lips of those who addressed them. No chance selection of speakers could, to an equal degree, have evoked the enthusiasm of their auditors, or left upon their minds an impression so benign and enduring. From the opening words of the conference, uttered by the Nestor of the profession, the illustrious principal of McGill university, to the closing speech of the last evening, the attention never flagged, but rather grew and gained in intensity at every consecutive session. Surely, therefore, the teachers who were present have every reason to congratulate themselves on the privilege they enjoyed, and to be grateful to those, who, by their unwearied exertions, business capacity, and unbounded self-devotion, contributed so largely to the success of the gathering.

The key-note of the convention was struck by Sir William Dawson. To him was committed the duty of delivering the opening address, and certainly no more interesting or instructive topic could have been chosen than his retrospect of the last forty years, his contrast of the past with the present, and his anticipation of a great future for the Atlantic provinces of the Dominion of Canada. Hopeful, earnest, wise, and cheerful, his words fell upon attentive and sympathetic ears, and doubtless brought brightness and comfort to many a desponding heart. He was followed by Dr. Schurman, who spoke upon a "Canadian University Curriculum." With singular power and felicity he enunciated his views of the duty of the university. "The university," he said, "should produce a many-sidedness of interest—a sensitiveness and susceptibility to all that is and to all that happens in the world." And regarding intellectual education as "that which stimulates interest in man and nature," he proceeded to examine the present curriculum, and to enquire in how far it provides adequate means for the training of students in the humanistic and naturalistic sciences. Taking for granted the broadest and most general education previous to entrance upon a university career he recommended that special attention be paid to the history of our own country, and that literature be assigned a more important position than it has hitherto occupied; while the Latin and Greek languages, which have been studied at the high school or college, he proposed to relegate to the class of optional subjects at the university.

There was no speech or paper read or delivered during the two days of the convention which was so provocative of discussion, or to which more frequent reference was made by other speakers than that of Dr. Schurman. The question of the place of the Latin and Greek languages, and their literature, in a course of public instruction and a university curriculum, is one which has often been canvassed, and towards a settlement of which we are no nearer than we were twenty years ago. Dr. Harrison, of Fredericton, and others, regarded the study of the classics preferable as an instrument of humanistic culture to any substitute that has been proposed. Sir William Dawson also defended the present system and pointed out the disadvantage under which students labored who had no knowledge of Greek, as compared with they who had but a little, when they entered upon scientific study. "You can't cut off Greek," he said, "without damaging the teaching of our sciences." It was particularly gratifying to observe the unanimity which prevailed among our leading educationists respecting the necessity of a thorough and complete course of classical instruction before entering the university. And in this they agreed with Dr. Schurman. The point at issue was the extent to which it ought to enter the university curriculum, and the stage at which students ought to be allowed to select a course for themselves. When the battle-ground is narrowed to these dimensions there can be little doubt that an amicable adjustment is possible among the combatants.

The admirable paper of Dr. Fitch on "Hand-work and Head-work in Schools" was both timely and instructive. While advocating the simultaneous training of the intellect and the hand in schools he was very careful to tell us that the former must never be subordinated to the latter, and that whatever might be the occupation of the pupil he must always be under the supervision of the teacher. If in past times it was wrong to overlook the manual training of boys, manifestly the true remedy does not consist in rushing to the other extreme. We would especially commend these words of his to those who see, in what they call *practical* education, a panacea for all the ills of humanity, and the only education worth communicating in certain conditions of society. "There is room in our schools for increased manual training, but the change should be made with caution. Don't make a fetish of technical instruction. The world can never be set right by dethroning the schoolmaster to make room for the artisan. The problem is not an easy one to solve, and experience can only determine how best to combine manual and mental development in our schools." Other speakers referred to the same subject and accentuated the principle which underlay the whole of Dr. Fitch's remarks, that a well trained intellect is the true and only sure basis on which to rest a mechanical or any other training, It becomes, therefore, a very doubtful question whether it would be judicious to disturb the present system, which has proved to be so successful, when administered with wisdom and spirit, and introduce processes alike novel and incongruous, which, if successful, may introduce young men somewhat earlier to the business of life, but, if they fail, must unquestionably bring disaster to the whole fabric of public instruction.

A very hopeful feature of the discussion of the subject of technical education, from its introduction by Dr. Stockton, till the close of the convention, was the almost unanimous opinion—that a sound and generous education, by which a youth is taught to observe and think, and is supplied with abundant materials for both, is the best preparative for the duties of life; and that when he comes to discharge them, his trained intelligence will grasp the meaning of methods and contrivances, and systematize the knowledge he gains from experience. Nor was there any hesitation in the expression of the conviction that the adoption of a scheme by which the education of our youth would be placed upon a narrower and more restricted basis, making it merely a tool for the acquisition of material gain, and counting its result as valuable in proportion as it helps to develop material resources, would disappoint the expectations of its advocates, and render education absolutely valueless as a factor in the humanizing of society. No one spoke with greater fervor and eloquence of the work and aims of the teacher than Colonel Parker, and none denounced in stronger terms the methods by which the mercenary spirit was being implanted and cherished in the young people of the present day. "No school," said he, "is worthy of the name, that does not make the formation of true, noble, manly character, its aim. The question of the day, respecting education, is not, how much will this system add to the commerce of the country?—what is its value in dollars and cents?—but the question is: Will it put more power and action into the soul of man?" And when he said so with vehemence and earnestness, there were few, indeed, in the vast audience, who did not heartily respond.

Rarely has it been our good fortune to listen to speeches of greater excellence than those which on the last evening carried the interest in these meetings to its culminating point. Dr. Fitch was again elegant, scholarly, clear, and forcible. Sir William Dawson exceeded his former address in directness and vigor, and reached a height of eloquence which could only be attained by perfect sympathy with the topic on which he spoke, and the audience which listened to his words; while the tone and earnestness of the Minister of Finance, in a speech admirable in conception and effectively delivered, in which he discoursed upon culture, the college and the teaching profession, were well fitted to cheer and reassure. Mr. Foster convinced his hearers that, though no longer a member of the profession, his tastes, predilections and proclivities are still literary, and his ideal of the true teacher as lofty as the most exacting educationist could desire. And one might detect a deeper sympathy with the third class, into which he divided people as to their ideas of culture, than with either of the others, as he said, "These set aside all consideration of the material, regarding culture and its results as means and elements of the development of the higher life. These are the thinkers and the dreamers. I pray God that the time may never come when the world will be without them."

To refer with only a passing remark to all the speakers who addressed the convention, would carry this article much beyond the limits assigned to it. We must content ourselves with mentioning the names of Mrs. Parker, Miss Magee, Sir Leonard Tilley, Judge King, Mr. Ferguson, Dr. Allison, M. Vitrain, and Prof. Ray Greene Huling, to whom the convention was greatly indebted for able and suggestive papers or speeches, interesting and instructive. But there was one characteristic of these meetings which we would not willingly overlook, the presence of all the Presidents, save one, of the colleges in the Atlantic Provinces, and the fact that one of the evenings was devoted to the discussion of the university in relation to the industrial and social interests of the community. The liberal spirit that pervaded the speeches of that evening, and the prevailing desire to effect a closer union between the general education of the country and the universities, must have been cheering to educational reformers. And while the members of the convention met in sections on Thursday forenoon, the college presidents and professors held an informal meeting and discussed matters of mutual interest. So pleasant and profitable was the conference that they determined to meet annually. This, of itself, we consider one of the most important of the immediate results of the convention.

This wonderful gathering is now dispersed, and most of the teachers have again entered upon their duties. We trust that their work will now have greater attraction for them, that they will pursue it with greater zeal and self denial; that they will have become more impressed with the dignity and honor of their calling, and determine to put forth every endeavor to make themselves worthy of it. With Judge King we hold that the most valuable residuum that will be left of the convention will be its salutary influence upon the heart and life of the teacher.

JACQUES CARTIER'S FIRST VOYAGE.

In the Transactions of the Royal Society of Canada for 1887, recently published, appears a paper under the above title, by Mr. W. F. Ganong, A. M., of Harvard University. There has always been much uncertainty as to Cartier's course in his first voyage to Canada in 1534, and as he was the first explorer of the Gulf of St. Lawrence who has left us any account of his discoveries, historians have considered it of much importance that his exact course should be traced and the identity established of the places he visited and described. This has not hitherto been done except for small portions of the course, and it has remained for a New Brunswick student to present to a Canadian society a clear and consistent account of the voyage from beginning to end.

There are known four accounts of the voyage—one in Italian, one in English and two in French. One of the latter is a reprint of a recently discovered manuscript, supposed to be the original account written by Cartier's own hand. It was by the use of the English and two French editions and their comparison step by step, together with old maps and charts, that the voyage was worked out.

Cartier, with two ships and one hundred and twenty-two men, set out from St. Malo, April 20th, 1534, to seek a passage to Asia by way of the north-eastern coast of America. After a prosperous voyage he reached Newfoundland on May 10th. Coasting to the northward, he entered the Strait of Belleisle and followed the coast of Labrador as far as the present Shecatica Bay and Cumberland Harbor, giving names, a few of which still survive, to all places visited. Finding the land so barren and rocky that it "seemed like the land allotted to Cain," he retraced his course as far as the port of Brest (at present Old Fort Bay), and thence crossed to Newfoundland. The first land sighted on the island was the present Highlands of St. John, to the north of Point Rich. Thence he coasted southward, visiting and naming nearly all of the bays, harbours and capes as far as Cape Anguille.

Leaving Cape Anguille, named by him Cape St. John (because he sighted it on St. John's day), he visited Bird Islands and then Brion Island, to which he gave the name by which it is still known. Mr. Ganong's paper traces minutely each step of Cartier's course up to this point, and it has been done in a general way by different historians, but from this point on, until he enters the Bay Chaleur, the interpretation is different from any other.

From Brion Island he went to the largest of the Magdalen Islands and coasted along its western coast to its southern extremity. He named a cape on the present Entry Island, Cape St. Peter, and the present Deadman's Island, Allezay. Thence he sailed to the westward, forty leagues, when he saw land which appeared to him to be two islands. The next day he saw that it was really not two islands, but "firm land lying S. S. E. and N.N.W.," approaching which he entered a beautiful but very shallow river which he named "The River of Boats."

Curiously enough, all writers have considered this coast to be that of New Brunswick, and the River of Boats to be either the Miramichi or some river to the south of it. But such an interpretation is entirely inconsistent with the facts given in the narrative.

Some serious mis-translations in Hakluyt (the English edition referred to above), together with a failure to recognize the fact that all of Cartier's compass directions are for magnetic and not true north, have no doubt led to the confusion.

Cartier's directions, distances, very accurate description of the coast, and his subsequent course, all show conclusively that it was the coast of Prince Edward Island that he reached, and that his River of Boats was the present Richmond Bay. His description of the coast, as indeed is the narrative of the entire voyage, is very quaint and interesting. "All this land is low and the most beautiful it is possible to see, and full of beautiful trees and meadows; but in it we were not able to find a harbour, because it is a low land, very shallow and all ranged with sands. We went ashore in several places in our boats, and among others into a beautiful, but very shallow river, where we saw boats of savages, which were crossing this river, which, on this account, we named the River of Boats [*ripuiere de Barcques*]."

Driven from the coast by winds blowing on shore, he ran away to the northeast, seeing from a distance Cape Kildare, which he named Cape Orleans. On July 1st he visited North cape which he called Cape of the Savages, because of an Indian whom they saw and left gifts for there. The same day he entered Northumberland Strait, and, having no knowledge that Prince Edward Island was an island, naturally thought he was in a large bay. July 1st being the day of Saint Leonarius, Cartier named his supposed bay after this Saint of his own country, the Bay of Saint Lunarius or Leonarius (*Sainct Lunaire*). This bay of Cartier's has given much trouble to all writers on his voyage from Lescarbot down to our own day, for there is no "bay" in all this region which answers to his description. On the other hand, the head of Northumberland Strait does so exactly, and his course before entering and after leaving it is perfectly consistent with this interpretation. He coasted along the shores of Prince Edward Island from North Cape to Cape Wolfe and his description of this region is as follows: "That day we coasted along the said land nine or ten leagues, trying to find some harbour, which we could not; for, as I have said before, it is a land low and shallow. We went ashore that day in four places to see the trees, which are of the very finest and sweet smelling, and found that they were cedars, pines, white elms, ashes, willows, and many others to us unknown. The lands where there are no woods are very beautiful, and all full of peason [*Hakluyt*], white and red gooseberries, strawberries, blackberries, and wild grain like rye; it seems there to have been sown and plowed. This is a land of the best temperature which it is possible to see, and of great heat, and there are many doves and thrushes and other birds; it only wants harbours."

The next day he sailed to the northward and approached Point Escumenac, to which he gave no name, and he speaks of the shallowness of the water in its vicinity. Then towards the north of this cape he saw another, and between them, he says, "there is a bay in the fashion of a triangle, which is very deep [*into the land*], which so far as we could see, lies north-east, and is all ranged with sands, a lowland." This was clearly Miramichi Bay, and he neither entered it nor gave it a name.

They coasted that day along the land which lay N.N.E. and on the morning of the next, July 3rd, rounded Point Miscou, which they named Cape D'Esperance, or Cape of Hope, (because they now hoped that they had found the western passage for which they were seeking) and entered Bay Chaleur. To this, a few days later, they gave the name which it has ever since borne. They crossed the bay and entered the present Port Daniel where they remained for some days, during which they explored the bay as far as the present Dalhousie. They had some traffic with the Indians here, and at Tracadigash and Paspebiac Points, and afterwards at Gaspé, which they reached July 14th. Here they set up at the mouth of the harbour a great cross bearing aloft a shield with the three white lilies of France, and the inscription "*Vive le Roi de France.*"

Cartier next crossed directly to Anticosti and coasted to the eastward to East Cape, rounding which he followed the northern coast of the island as far as North Point. Here both tides and winds gave them much trouble, and the season being well advanced (it was August 6th), they turned back and started for home, reaching St. Malo by way of the Straits of Belleisle on the 5th of September.

In the above brief outline of Mr. Ganong's paper, we have been unable to give any of the author's quotations and arguments by which he substantiates his opinion of each step of the voyage. The paper, which occupies pp. 121 to 136 of Vol. V. of the Royal Society's Transactions, is accompanied by a map of the Gulf, on which Cartier's course is laid down, and the names given by him are shown.

It hence appears that the only names given by Cartier in the Maritime Provinces were as follows: River of Boats to Richmond Bay, Cape Orleans to Cape Kildare, Cape of the Savages to North Cape, Bay of Saint Lunarius (or Lunario or Lunaire) to the head of Northumberland Strait, Cape of Hope to Point Miscou, and Bay Chaleur to the bay which still bears the name.

THE INTERPROVINCIAL EDUCATIONAL CONVENTION.

The first united convention of the teachers of Nova Scotia, New Brunswick and Prince Edward Island was held in St. John, in the third week of July, 1888. The gathering was a thoroughly representative one, including not only every department of education in the three provinces, but distinguished educationists from England, United States and Upper Canada. The presence of Sir Wm. Dawson, Dr. J. G. Fitch, Dr. J. G. Schurman, Col. Parker and Mrs. Parker, with other noted men and women will make the gathering one long to be remembered; while the opportunity for the interchange of ideas among our teachers marks a new era in our educational progress.

OPENING OF THE CONVENTION AND PUBLIC RECEPTION.

The St. John Mechanics' Institute was tolerably well filled at the time appointed for opening the Convention, on Tuesday evening, July 17th. As a preliminary step to organization, Inspector Oakes, of Canterbury, N. B., was appointed temporary chairman. He appointed a nominating committee as follows: Principals Mullin, Anderson, McKay, of Pictou, G. U. Hay and Prof. Eaton. This committee, through Principal Mullin, nominated the following officers for the Convention: President, Dr. Allison, Superintendent of Education for Nova Scotia; Vice-presidents, Superintendent Crocket, of New Brunswick, and Superintendent Montgomery, of P. E. Island; General Secretary and Treasurer, John March; Recording Secretary, L. A. McKenna, of Dartmouth, N. S.; Enrolment Secretaries, Supervisor McKay, of Halifax, H.C. Creed, of Fredericton, and Geo. E. Robinson, of P. E. Island. On motion, Dr. Allison's nomination was approved. Inspector Oakes introduced Dr. Allison, who took his place and thanked the Convention for the honor conferred. The nomination of the other officers was approved as made.

At eight o'clock, every seat in the Institute was filled and on the platform were seated the representatives of educational institutions of the three provinces, as well as distinguished visitors from abroad. Dr. Allison, President of the Convention, after a brief address, vacated the chair, which was taken by His Worship, Mayor Thorne, of St. John, who, in a brief address, welcomed the visitors in a few well chosen words. After alluding to the great advance in education in these provinces and the opportunity that this convention would afford for the interchange of helpful ideas, he said that no pleasanter duty had ever devolved upon him than of tendering a welcome on behalf of the city to the visitors. He was followed by Mayor Chesley, of Portland, who cordially extended a greeting on behalf of the City of Portland.

Judge King, of St. John, said: It was a matter of gratification to him that this, the first Interprovincial Teachers' Institute, was to be presided over by one who was his companion at school and college, and his life-long friend—Dr. Allison. There had been a degree of organic union brought about between the teachers of the provinces during the last year by that excellent periodical—the EDUCATIONAL REVIEW—which it had been his pleasure for some time to peruse. Now there would be the closer union of contact, deliberation and conference, from which much good must come. This body of teachers embraced as large a proportion of able men as adorn and dignify any body of men anywhere. In this connection the speaker made special reference to Sir William Dawson, and to the province of Nova Scotia, whose singular fortune it had been to present to the world great men in an almost undue proportion. If this Convention left a livelier sense of the value of the teacher's work it would have fulfilled a great and important object. He hoped the visitors' stay would prove pleasant. They would find a certain picturesqueness of scenery, and there would be a certain interest, too, to see how a people settled down on this barren rock had progressed and developed institutions around them. And he hoped their pleasures would not be marred by a visit from the dense fogs generated on the coast of Nova Scotia. (Laughter). What is it that makes an assemblage of teachers such as this notable? You are not here to form a trust—to use the term in the commercial sense by which a grand old word has been degraded and defiled. You are not here to enhance the price of your wares, though in truth you are not likely to have their value over-rated. Nor are you here merely to discuss methods and theories, however important these may be. Your most important aim is to affect conduct, and the greatest residuum that will be left when you are done will be that which touches the heart and life of the teachers. Organization is valuable, but the personal element in education is of the first importance. The first is machinery, the second is force. The teacher is at once a scholar and an instructor. It is out of the fulness of scholarship and the desire to impart knowledge that the teaching faculty comes, and both the former are essential to the latter. He hoped that the intellectual inspiration arising from this convention would prove of value to all; but remembering the words of a great and wise lawyer and judge—wise because he was a lawyer and judge—(laughter)—Lord Bacon—he would conclude lest it be said of him, "An over-speaking judge is no well tuned cymbal." (Applause).

The Mayor read a letter from Chief Justice Ritchie, expressing regret at his inability to be present.

Dr. A. A. Stockton then addressed the audience. After expressing concurrence in the pleasing sentiments expressed by previous speakers, he remarked that to show the esteem in which education is held in this province it could be said that out of a total revenue of $600,000 more than 25 per cent was devoted to education. He paid a graceful compliment to Judge King, the father of the free school system in this province, and remarked that it was accepted heartily, and with the best results by all classes and creeds of the people. Addressing himself to the question of technical instruction he referred to the report of a royal commission in England, which showed that as compared with the systems of France and Germany the difference lay not so much in particular but in the general education of the classes and the masses of the people. Prof. Ramsay says that in general we hold our own, but that in scientific knowledge of chemistry in its highest branches and in art and design we are deficient. He would like to hear some expressions of opinion from the distinguished gentlemen present at this convention on the question of technical education. Personally he was now inclined to agree with Prof. Ramsay, that what is needed is a general education of the intelligence and judgment, after which practical experience will round out the character and fit it for the battle of life.

Dr. Allison was then called upon by the chairman. He pleasantly responded on behalf of his fellow visitors to the words of kindly welcome that had been spoken. Speaking for Nova Scotia, he would remark that it was too great a country to entertain any feelings of unworthy jealousy. She still regrets that the eminently wise arrangements of the Treaty of Paris had ever been disturbed, sorry that the great province of "New Scotland" as then constituted, stretching from the St. Croix almost to the St. Lawrence, had ever been broken up into several provinces. The present Nova Scotia, however, the nucleus of that great territory, still waits with open arms, ready at any time to welcome back to her embrace those wayward sisters. (Laughter and applause). Coming to more serious matters, he remarked that it was an unique and impressive occasion on which the teachers of the three provinces thus met and were accorded such a splendid welcome. It is a truism that the true character of institutions depends upon the fundamental principles upon which they are based. Criticism, to be of value, must recognize the fundamental conceptions underlying the institutions criticized. For lack of this recognition much criticism of our educational systems is worthless. If the free school system were merely an eleemosynary contrivance for the education of the poorer classes there would be justice in the criticisms made; but it is the idea of the people of these three provinces that their statutory systems of education are well designed and constructed to perpetuate and confer upon all classes the benefits of education. They never lose sight of the incalculable value of education to every individual.

Superintendent Crocket being called upon, briefly extended thanks for the kind welcome extended to the teachers.

Superintendent Montgomery, of P. E. Island, expressed thanks in behalf of the forty teachers from his province who were in attendance. He was not prepared to speak, but might say for his province that if small in other ways, and if its teachers come with somewhat of diffidence, they could say that the Island prided herself on her educational system and felt that it would not suffer by comparison. If New Brunswick spent 25 per cent of her total revenue for educational purposes his province spent 44 per cent, or $111,000 out of a total of $250,000. (Applause). He would not say this as a boast, however, for experience had shown that while the government had done so much the people had as yet done their full share. He paid a high tribute to Dr. T. H. Rand, upon the result of whose experience in introducing the free school system in Nova Scotia and aiding to do the same in New Brunswick the Island had based its system. He thought that much good would result from this convention, since now after some years' experience of each system the teachers of the three provinces had met to compare notes.

Col. Parker was called upon and was greeted with prolonged applause. The portly colonel remarked that he was a delegate from 375,000 teachers, and was the smallest of the lot. Coming from a place where there was six feet of mud, he found it pleasant to know that his feet were placed upon a rock. He wanted to see the whole town, the whole country, and Nova Scotia as well. He would try and keep off the fog, and would carry away all the fish he could get. (Laughter.) He would consider this his duty. (Renewed laughter.) He was glad as a teacher to be among them. He liked to hear them talk about free school systems. The legislator, the lawyer, the leader of the future, is the common school teacher. Just as civilization rises the teacher rises. The greatest profession on earth is that of the common school teacher. A true government is founded on the golden rule, its motto, Each for all and all for each. The common school means that all the people guarantee to each the liberty and means to be free. Charity?

It is charity just as it is charity for the parent to clothe his child. Charity? No! It is God-given right! No nation—God has said it—can prosper until the golden rule is woven into the warp and woof of the nation's life. In the march of progress the teacher leads the van. The teacher's work is the work of God. No school is worthy the name that does not make true, noble, manly character its aim. As to the object of education, it is not the question how much will this system add to the commerce of the country—what is its value in dollars and cents—but the question is, will it put more power and action into the soul of man? The good that education seeks is the good of the soul.

A select choir led by Prof. Gubb, Director of the Oratorio Society, gave appropriate music at intervals during the evening.

FIRST DAY'S PROCEEDINGS.

Morning Session.

The teachers of the different provinces met for enrolment at 9.30 on Wednesday morning under their respective secretaries.

At 10 o'clock the convention was formally opened by President Allison. A letter was read from Dr. Th. H. Rand, regretting that illness had obliged him to be absent, and expressing his earnest sympathy with the objects of the convention. Dr. Allison in a pleasant and forcible speech introduced Sir Wm. Dawson, whose subject would be "Some Reminiscences and Prospects of Education in the Maritime Provinces." His own recollections of the speaker carried him back over a period of nearly forty years, when as a young fellow he had gained an unexpected holiday owing to the "master's" attendance at a teachers' institute, called by the then superintendent of education in Nova Scotia, a man whose fame is now more than continental, whose name to-day is honored everywhere. He had pleasure in introducing to them the president of McGill college, ex-president also of the Royal Society of Great Britain—Sir William Dawson.

SIR WM. DAWSON'S ADDRESS.

Sir William Dawson, who was greeted with prolonged applause, remarked in opening that after the reference made by the chairman to work in Nova Scotia so many years ago, he thought he might fairly pose as an educational patriarch. And so far as the Maritime Provinces were concerned, he feared he might be regarded as an educational Rip Van Winkle. But though long absent from the provinces he had been at work elsewhere, and had kept an eye on the work here and rejoiced in its progress. His own first experience in educational work was in 1850, and was somewhat curiously brought about. His first idea was to become a working geologist, and there being no schools here where the requisite training could be given he had gone to Edinburgh, being probably the first to go from the province to receive there a special training. On his return he was naturally full of enthusiasm, with reference to work in natural science. Dalhousie college was then closed, but a number of public spirited friends of the institution made an effort in 1849 and 1850 to open it again, and he was invited to deliver a course of lectures during the winter. That invitation he accepted. It so happened that at this time a new educational law was engaging the attention of the government, and after its passage and the conclusion of his course of lectures, he was asked by Messrs. Young and Howe to accept the position of Superintendent of Education. He had first objected on the ground of youth and inexperience, but was finally persuaded, and accepted the position, holding it for three years. There was a vast amount of labor awaiting him. There was no uniformity of method in teaching, no system of inspection, no general system and means for collecting and diffusing information. In the schools there was insufficient apparatus, poor and few text-books—they were, in fact, destitute of most things now deemed indispensable in our school-rooms. There were some good teachers, and much was done locally by enlightened and public spirited commissioners, but there was great lack of unity and combination. It was important to awaken public feeling, first, to the necessity of establishing a normal school; and second, to the necessity of a general assessment law for the support of all the schools. To the first of these there was little opposition, the second was opposed with much bitterness. Before he quitted office the normal school was established, the assessment law was carried into effect later through the efforts of Sir Charles Tupper. And this last fact, he thought, was a notable instance of the subordination of party spirit to patriotism. Sir Charles Tupper, while in opposition, was in sympathy with the scheme, and so expressed himself, and when his party was returned to power, he bravely faced the local hostility to the measure and acted on his convictions. While superintendent, Sir William, in his journeys through the province, collected materials for a small book on Agriculture, another on the Geography and Natural History of Nova Scotia, and that on Acadian Geology. When he gave up his position he had hoped that a geological reconnoisance of the province might be made in connection with the projected railway construction, but that scheme was defeated, the construction of the railway itself was for a time delayed; and receiving an offer to go elsewhere and engage in the teaching of natural science, he closed his direct connections with educational work in the Maritime Provinces, though still returning in his vacations to study their geology and fossils.

Leaving personal matters, Sir William proceeded to contrast the period to which he had referred with the present, having special reference to Nova Scotia. In 1850, there were 886 schools on the list—now 2,000; then 30,000 pupils in attendance—now 105,000; then an average salary of $144 per year, with some as low as $64—now a third-class teacher gets $169, and the general average is $250. It is, no doubt, desirable that the remuneration should be still more satisfactory; but to accomplish this the quality of the work must rise, and the number of incompetent competitors be lessened. In 1850, Dalhousie College was doing practically nothing, and Kings, Acadia and Mount Allison, working in a very small way. In Halifax there were some good schools, both public and private, but there was no common system, no satisfactory supervision. There were only 1,600 pupils in attendance in the city. Now there is an admirable system, good buildings and apparatus, and 5,000 pupils are in attendance. Doubtless, the city has grown, but the educational progress has been more than proportionate. New Brunswick was ahead of Nova Scotia in the old time, in having two training schools, and still leads in that she obliges all teachers to be trained. In Nova Scotia last year, however, 82 diplomas were granted. Teachers' Institutes in the old time were non-existent. Now there are county, provincial, and lastly, an interprovincial association, which has brought together to-day this large assemblage of earnest and able teachers, as well as the EDUCATIONAL REVIEW, which is marked by a high order of excellence, both in tone and matter.

With an apology for an old man's love of reminiscence, Sir William referred again briefly to personal experiences while superintendent, and then turned to the consideration of the educational outlook. We have an unfortunate habit in the Maritime Provinces of regarding ours as a small country. We are over modest. He had been led to believe that the children reared in these provinces by the sea were more thrifty, active, independent and self-reliant than those farther inland. This is largely owing to the more varied character of their training, which gives them greater adaptability; but it was an advantage to be profited by in education. As to arts and trades he doubted if the elementary schools need meddle with these to any great extent. Such things as the use of tools in working wood, the metals, and their properties, might usefully be taught, but rather as a matter of recreation. The real work should be in training the general intelligence. That has largely been the plan in the New England and Scotch schools, and to a great extent with us. Technical instruction is valuable as an accessory, but is not essential. The young people from these provinces scatter everywhere over the continent. You meet them in all quarters and find that they have made their mark. They owe it to their natural capacity, to the influence of pious and intelligent homes, and the training in good elementary common schools. It should be our aim to keep up the standard of these common schools so that what New England is to the United States these provinces may be to the Dominion.

The resources of these provinces mark for them, however, another duty than that of sending their sons and daughters abroad, however useful and creditable this may be. Nowhere on the eastern coast or westward to the Rockies are there such magnificent natural resources, such facilities for developing and profiting by them. In the matter of this development we are somewhat behind. Circumstances political and financial have caused the delay. We cannot hurry these great movements. But the time of development will come. Nature will prevail. The countries of great natural resources become the countries of great wealth and population. That time will come to these provinces—a time when their relative influence will be infinitely greater than to-day. There are indications even now in the greater interest taken by capitalists abroad in our mineral wealth. But this has to grow and develop, and those now young will when they are old look back to these days and note a greater contrast than that to which attention has been called this morning.

Personally the speaker was glad to look upon the progress made, thankful for any personal part in it. He had not shaped his own life. We may rough-hew, but it is God who shapes. If we do our best as Providence points the way, perform the work that comes to our hand, we will be able in old age to look back with satisfaction, finding joy in the memory of every kind and helpful act and word. He hoped all would so regard it, regard themselves as having a great commission given them, having faith in God and Christ, and, animated by the spirit of their fathers, train up a generation of like character to go out and make the name of their country great. Let us not think little of our country. It has boundless wealth in sea and soil, and in the bowels of the earth. Let us train the heads and hands of our children, and even if we do not live to see it, they who follow us will see these provinces become a centre of wealth, civilization and enlightenment, from which shall radiate beneficent influences, not alone through the Dominion but throughout the continent.

When the applause subsided that greeted Sir William's address, Dr. Allison observed that it was truly an inspiration to see an old man with his face toward the morning speaking words of hope and cheer, and he felt that the speaker's words as to prospects and duties had fallen as gentle dew upon the understanding and the hearts of the listeners.

ABSTRACT OF ADDRESS OF J. G. SCHURMAN, D. SC.

Prof. Schurman, of Cornell University, took for his subject "A Canadian University Curriculum." In his opening remarks Prof. Schurman said that we are sometimes taunted with being colonists. Personally he would like to see that cause of reproach removed by a federation of the empire, the signs of which are already in the air. But it was not a bad thing, after all, to be colonists. He remembered that Homer, Herodotus, and the founders of philosophy for two or three generations, were colonists. And we ourselves are fortunate in having the name of one distinguished in geology and palæontology, one who has inquired into the very origin of life itself, Sir William Dawson—a colonist (applause)—whose name, colonists though we are, makes us respected all over the globe.

In dealing with the curriculum of the typical university we have to notice first that we have been imitative. If we have the advantage of being a young country we have the disadvantage of being without road marks, and so have fallen back on the resource of childhood—the mimetic faculty. We have imitated England in politics; and England, but more especially Scotland, in the matter of universities. From the latter we have learned much that is good, but along with it much that is evil. One evil of the Scottish system is that there is no matriculation examination; and that the university standard is lower with us than in the United States is owing to Scottish influence. A still greater evil is the custom of six months' vacation. Even now, though there has been improvement, five or six months is considered the correct thing. While all others must work the whole twelve months it is assumed that the student can absorb all that is knowable in four years of from six to eight months each.

In considering the question of a curriculum the first question is, what do we aim at? [I am speaking of the college and university not of the school or academy.] One answer is always at hand. It is—to develop the powers. He thought, however, that every man whose judgment was not biased would bear witness that the powers were better developed in many who had only practical experience than in many who had the privileges of the university. But we aim at something more. The university man should be a broad man, and in this broadness is the distinction. The university should produce a many-sidedness of interest, a sensitiveness and susceptibility to all that is, to all that happens in the world. There should be nothing in the universe to which his nature is not open and responsive. It matters not what you consider, the rock, the plant, the tiny insect, the tides, the planets, the noisy human life, the central peace that ever subsists 'mid all this agitation—all this should interest the educated man. But no man can accomplish all that this many-sidedness of interest implies. It matters not. The value of the ideal lies in that it is impossible of accomplishment, that, strive as we may, it can never be fully attained. Time was when one man could almost grasp all the knowledge of his era; but with the growth and specialization of knowledge all this is changed, and to-day a single science opens a field too broad for any single mind.

When we look upon us, all objects naturally fall under three heads: Nature, in a restricted sense, man with his self-consciousness, and the spiritual principle which underlies both—God. In these three ultimate objects education develops in man an interest. Of one of these, the last named, he would not at present say more than that it belonged to theology and philosophy to deal with this great subject, without a living interest in which no education was complete. Every university curriculum must have philosophy. Next to this education consists in stimulating interest in man and nature. For convenience he would designate the one as humanistic the other as naturalistic science. In Scottish universities the only means of humanistic culture are Latin and Greek. There is not, or was not a few years ago, a single professor of history in a Scottish university. Edinburgh and Glasgow have professors of English literature, but in Aberdeen and St. Andrews, it is taught by the professors of philosophy. The same is largely true of the old English universities, and we have largely followed the example, necessity only forcing us to add French and German. We have also English literature, but there is only one professor of English literature alone in the Dominion of Canada. The Scotch and English inherited their system from the middle ages. Their education corresponded with that of the Greeks and Romans, with this remarkable difference, that while the Greeks studied Greek—their own language—and the Romans studied Latin—their own language—we receive our humanistic culture through a language that is foreign. Herein lies the fallacy—that while they studied their own, we study a foreign language. This study awakened among the Greeks a lively interest in mankind, and would with us if we could read Greek as we read German and English. It is then a noble instrument of humanistic culture; but as so few ever attain proficiency in these languages, then, valuable as they might be, they are for us a waste of time and an impediment to humanistic science. This of course is not incompatible with the study of Greek and Latin in the schools, where they are an invaluable instrument of training in language.

It is easy to criticise and destroy, but more difficult to construct. The question now arises, if we cannot master Greek and Latin as it is done in Oxford and Berlin are there for us any substitutes as valuable for humanistic culture? He thought there were two that deal with man on a broad scale—history and literature. History deals with all that man has done—his laws, his institutions, his religion, his efforts to master the world, his slow rise from barbarism and the spread of culture; and it therefore brings us into contact with the very essence of man. Literature does the same more effectively. History is the body, literature is the soul. We see in it the play of passion the struggles, the discontent, the yearnings after the infinite. It introduces us to the holy of holies of human nature; and if our culture is to be the broadest, fullest, and most in sympathy with man, the means is literature—and for most of us English literature. The teaching of literature is difficult. The professor must interpert the thought, must lay open the very soul of the poet and thinker. But it can be done. That it has not generally been done is because the best talent is given to Greek and Latin and the sciences. Its value has not been fully recognized.

No university man can be called educated who has not a naturalistic interest developed in him. There are some fundamental aspects of nature, a knowledge of which makes a man familiar with naturalistic science. A knowledge of space is gained through mathematics, science also deals with force as an ultimate entity, chemistry deals with elements, biology with life, psychology with the soul. If an interest in man and nature is to be developed every university man needs a knowledge—not special but general—of all these. It seemed to the speaker that in these days we are running mad after specialization. What we want first is a general knowledge. Let man make that his ideal and he would gradually rise to a many-sidedness of interest in man and nature.

In Canada naturalistic science is in a very satisfactory condition. But there is one deficiency. The modern world is distinguished by inventions, by the application of natural forces to the mastery of nature. The learned men of antiquity despised manual labor, but we have changed all that. The dignity of labor is becoming more and more recognized. Yet we have not fully recognized the value of technical instruction. An Edison or a Bell is as important a factor as a Huxley, a Bunsen or a Helmholtz. The university has not solved the problem of technical instruction. We have great resources. Where are our schools of agriculture, of arts, of mining, of engineering? In Toronto there is one professor of technology. He does it all. In McGill college there is a school of applied sciences under Sir William Dawson, which ranks among the greatest of the world. But it is a solitary exception. There is a rivalry among maritime colleges. That one will achieve success which first provides technical instruction. The speaker would leave Greek and Latin to those who wish thoroughly to master them, and let the rest receive humanistic culture through general history and literature. This would involve change. There is in Canadian universities a lack of historic instruction. In Cornell university there are seven men who devote themselves to history. He thought there should be in our colleges a chair of American history, with special reference to that of Canada. He, himself, had sat at the feet of one of his colleagues for the last year learning American history. That work at this time of day would not have been necessary if in our own colleges there had been a chair of North American history. To note the prominence given to their own history by the people of the United States one would think their country was regarded as the hub of the universe. We should take a leaf out of their book. An attempt is now being made in Toronto to introduce the teaching of North American history as suggested. The work will be confided to a gentleman from Oxford. The speaker had no jealous feelings relative to men from the mother country. Indeed to one, a gentleman who came from Scotland some twenty-five years ago, his native province owed her rise from a very low state to the proud educational eminence she had attained. He referred to Principal Anderson (applause). But apart from any feeling of jealousy he still felt that the right man to teach Canadian history is a Canadian. He asked the minister of education why a Canadian was not appointed. The answer was, Show me the man—and he was nonplussed. He felt that this should not be so. The time is ripe, the field is promising, for some Canadian to do in the department of Canadian history what a Dawson has done in Canadian geology.

Prof. Schurman's address made a profound impression, and the applause which followed it was long continued.

Address of Ray Greene Huling, A. M.

The following is an abstract of the address of Ray Greene Huling, Principal of the New Bedford, Mass., High School:

The "Wizard of the North" in his story of the journey of the "fiery cross," presents no inapt picture of the descent of learning through the ages. The school is the point of contact between each generation and the next, the only point at which the former meets the latter with system and definite purpose. The immediate end of formal education is the development of the mind, though physical and moral culture is also indispensable. This end is ever the same, but the means of securing it are constantly changing and depend upon two varying factors,—our knowledge of the child's mind, and the nature of its surroundings. That these must vary with the advancement of knowledge is very plain. Hence are developed from the teacher's work a variety of problems, which, whether pleasant or annoying, we are bound to face. Some of these are far easier to state than to solve, but to the solution of the more pressing we ought to contribute something of earnest thought and experiment. The problems current in New England are, doubtless, not widely different from those in the Maritime Provinces.

The Colleges and the Preparatory Schools.—A very interesting problem is suggested by the relations of the New England colleges and their fitting schools. The score of colleges differ widely in aims, in facilities for instruction, in the number of students, and in reputation for results secured. They are independent of each other, and present to the applicants for admission demands quite divergent. One requires the passing of an examination upon a dozen distinct subjects, but allows much liberty of choice. Others demand preparation on fewer subjects but fix them with precision. Still others will accept in lieu of examination approved certificates. The subjects specified are not the same in all, the quantity and quality of preparation required alike differ, and the methods of testing ability are unlike. The result to teachers who send pupils from the same class to several of the colleges is perplexing and depressing.

The recent changes in college policy, though improvements, tend to increase the demand upon the preparatory student. The seminary method in history, experimental study in the natural and physical sciences, invention as an element of mathematical study, sight reading in the languages,—these involve better work before the student gets into college, as well as afterwards.

Meanwhile the type of college professor has somewhat changed. Specialists rather than men of comprehensive attainments are sought for the various chairs. Though stronger instructors in their subjects, such teachers know less of boy nature than the older type of professors, who generally were summoned to the college from academic positions and so were more likely to make the passage from the fitting school to the college easy and natural for the applicant.

The preparatory schools also are changed. Academies, save a favored few, have given way to high schools. These latter, as the head of the public school system, have other tasks beside that of preparation for higher study, yet commonly must do that work also.

From all this it comes about that the break between the secondary school and the college is the most serious which the student finds; the two sets of institutions need a more adequate adjustment to one another.

In the effort to secure this there has been formed the New England Association of Colleges and Preparatory Schools, at whose meetings the presidents and professors of the colleges unite with the teachers of the secondary schools in the discussion of questions having common interest for both classes. The colleges have also established the Commission of Colleges in New England on Admission Examinations, whose mission is to maintain the existing degree of uniformity and to suggest such improvements as commend themselves. This body has no power save to recommend.

The result of these movements has been already felt. A better understanding exists, and attention is concentrated upon definite points of difference. There is every prospect of further gain. The movement is spreading, moreover, to the middle States and the west.

Country Schools.—The problems thus far mentioned grow out of conditions that prevail in cities and large towns. But extensive areas in New England are still thinly inhabited, and some are losing population. Emigration to the west and the drift cityward have drained the hill towns. Hence new problems arise here that are unknown in the cities. Of these the greatest is how to secure good schools in sparsely settled districts.

In New England the responsibility for education has ever been laid directly upon the community whose children are to be educated. The towns were even divided for school purposes into little districts centreing about the little school-house, and to the inhabitants thereof all care of the school was committed. This district system once served an excellent purpose. From "the little school-house" many boys have borne forth the sense of comparative ignorance and the thirst for learning which are the richest fruits of school life. But the district school has failed to keep step with the march of progress. The schools are small and ungraded, the attendance desultory. The teachers are poorly paid, often poorly selected, and so not always efficient. Neither pay nor prospects of promotion are strong enough to induce intelligent preparation for the teacher's work, though the normal schools are doing all they can to supply this need. Inspection worthy of the name is rare, or entirely absent. Methods against which progressive pedagogy has for years shouted itself hoarse hold on their way in the district school with imperturbable calmness.

The first step, therefore, in solving the problem of the rural schools is to replace the district system with the town system. By this latter plan the money raised for education is expended by the town* authorities, who provide as many schools as need requires, and furnish uniform advantages to all. More efficient committee men control the schools, securing better teachers, more adequate pay and better conditions of work. The change has been beneficial wherever tried. Massachusetts has by law abolished school districts. Maine, New Hampshire, Rhode Island and Connecticut have permissive laws under which the town system is gaining ground. In Vermont the old system yet prevails, but public sentiment is greatly divided.

The adoption of the town method is only a partial remedy. Even then the inspection, when unpaid or paid only nominally, is far from being efficient. This must be so. Every man to his trade. To establish schools, organize them, make rules for conducting them, plan courses of study, select and furnish text-books and supplies, choose and control teachers,—these duties require not only general intelligence and practical judgment, but special intelligence growing out of familiarity with schools. Said a young physician serving upon a school board recently: "I find myself in a school-room much in the same condition that you would be in a sick-room. I may see that something is the matter, but I have no means of finding out just what the matter is, nor should I know what to do if I found out." His case is a typical one. Out of imperfect supervision spring many evils. A large increase in the number of school superintendents is the imperative need of the country schools all over New England. With these would speedily come better teachers, better instruction, and better educational conditions on every hand.

But more adequate supervision implies a larger expense, and an increase too, where the strain of taxation for schools is now hardest; for the little towns are now paying more for schools in proportion to their taxable property than the large cities. How can the added expense be met? The answer must come from the enlargement and wise distribution of the school fund of the States. Local control must yield something to centralization. The rich cities must pay back to the towns impoverished by the flow of the human tide to those cities, a part of the debt they owe.

Illiteracy.—Other problems growing out of our complex and changing life crowd upon our attention. How shall we prevent the illiteracy which poverty and immigration combine to create, and which parental neglect and avarice tend to swell? Free schools, free text-books for all, evening schools for those who must labor by day, heavy fines for the employment of illiterate minors,—these are some of the answers which our legislators present.

But I must not unduly prolong the consideration of my subject, which, indeed, is limitless. There is, nevertheless, one problem important enough to demand a few earnest words. It is the matter of moral training.

Moral Training.—The separation of church and state is an acknowledged principle in our national and local governments and its interpretation is constantly removing whatever of a religious character still remains attached to secular usages. Yet religion, as it furnishes the ultimate ground of all obligation, stands in the closest relation to morality, which is our name for the obligations which lie between man and man. It is important to consider whether in the public school, which is secular and not religious, there are direct means for training in morality. For the moral training of the young is essential to the preservation of civilization, and large numbers of children are reached in school who are not affected by the church and on whom the home has little power for good.

The discipline of obedience, indispensable in the school-room, has abundant application elsewhere,—towards parents, employers and their agents, government, and towards the divine will however revealed. We may be sure, then, that in holding our pupils to obedience we are laying a good foundation for moral advancement. The pupil, moreover, is compelled to be punctual, and regular in habits throughout the session, an admirable fitting for all after life. He is also taught the discipline of silence, for silence is "the soil in which thought grows." These mechanical duties,—obedience, punctuality, regularity, silence,—form an elementary training in morals without which it is very difficult to build any superstructure of moral character. Morality must begin in

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[* "Town" in New England means the same as "township" in the provinces.]

mechanical obedience and by degrees develop into individual responsibility.

Of the higher moral duties, some relate to ourselves. The school can teach cleanliness, neatness, temperance, and moderation in the gratification of the animal appetites, though its opportunities for enforcing some of these is slight. It has, however, powerful resources for leading the pupil to self-culture and industry,—the intellectual and the practical sides of the ancient virtue of prudence. What better method has ever been devised to educate youth into industry than the school method of requiring work in definite amounts and at definite times and of an approved quality.

There are duties which relate to others than ourselves, which can be effectively taught in the schoolroom. One we may term courtesy, including politeness, modesty, respect for public opinion, liberality and magnanimity. Another is justice, the chief of the secular virtues. It includes honesty, fair dealing with others, respect for their rights, property and reputation; it also includes truth-telling as well as truth-acting. On this point the school can be very effective, for every lesson is an exercise in searching out and defining the truth; but a careless teacher may cultivate immorality instead of virtue. A third duty of this class is respect for law, as the only means of protecting the innocent and punishing the guilty. In the cultivation of this duty a few years have seen a great change. Punishment through the sense of honor has for the most part in the best schools superseded the use of the rod. But a school governed by an arbitrary and passionate teacher is a terribly demoralizing agency. The law-abiding virtue is weakened and the whole company of lesser virtues give place to passions and appetites.

Teachers of the right sort may also diffuse in their schools some features of the "celestial virtues," faith, hope, and charity: of faith, a belief in the theory of the universe which Christianity teaches; of hope, its practical aspect, which acts as though that theory were true; of charity, the greatest of the three, unselfish devotion to the welfare of others. But these traits can be taught only by teachers who themselves are under their inspiration. This fountain cannot rise higher than its source.

Moral culture, then, is a possible outcome of school life. What are its methods?

There are four elements essential to moral training. The first is knowledge. One must be led to see his duty. The daily reading of appropriate selections from the Bible gives an excellent background, while cool and unimpassioned conversation on the occasion of sudden demand for action completes the work. For this purpose the numerous cases of discipline at school are very valuable. When rightly used, they often become turning points in the lives of the disciplined. For confirmation we may review our own lives.

The second element in moral progress is right motives. The choices of the will are determined, in character and in intensity, by the emotions. Hence one who would train another morally should so surround him, if possible, that right and wise desires may be suggested to his emotional nature. What opportunities for this are presented in the little autocracy we call a school!

Third, among the requisites for moral growth is the opportunity for choice. The will, like the intellect and the emotions, must get its growth by action. A man of character must have a strong will as well as one rightly directed. Teachers are wise, then, if they leave open before the pupil more ways than one, blocking his path when he goes wrong, and resolutely compelling him to retrace his steps when he deliberately chooses an evil course.

Then, in the fourth place, there should be continued practice until habit is set up. Good instruction is important to form or reform character. Example avails only when seen or distinctly remembered,—and not always then. A few right choices by the mastery of right impulses are not enough. The right exercise of the will must continue until by habit the choice turns, "as the needle to the pole," to the deliverances of conscience and sound reason. Then we have the man of principle, the master of himself.

"And blest are those whose blood and judgment are so well
commingled
That they are not a pipe for fortune's finger
To sound what stop she please. Give me that man
That is not passion's slave and I will wear him
In my heart's core, ay, in my heart of heart."

Such, therefore, are the possibilities of the school, and such the methods lying ready at the teacher's hand. What remains? Why, the great problem of all is still to be suggested. How shall the teacher be induced to take up and prosecute the work of moral training? O, that some power would move our wills to rise above the pettiness of our registers and daily marks, that we may shape these springing lives for their future! For this, thank God, is our real work, the rest but the surrounding and enclosing pale.

Afternoon Session.

On the opening of the afternoon session it was decided to send a telegram of fraternal greeting to the National Educational Association, in session at San Francisco; also, to receive a delegation from the W. C. T. Union at the opening of Thursday afternoon's session.

The President then introduced Dr. J. G. Fitch, of London, England, who read a paper on "Hand-work and Head-work in Schools," which will appear in our September number.

Col. F. W. Parker then addressed the convention on "Artist or Artisan, which?" The following is an abstract:

There is but one question in this world of ours, and that is how to make man better. There is but one answer. That is education. There is but one way. That is work. Blessed is the man who early in life falls into love—with some great work. (Laughter.) Most blessed are they who do the work that does most good to mankind. He would talk about two kinds of work and workmen—both honorable in their places. One kind of workman works from a pattern. He sees the object before him and reproduces it just as it is. That's the height of his skill—to copy. These workmen we call artisans, mechanics. Their work is of vast use to mankind; honorable in the highest degree.

The other kind is the workman who, by nature of his work cannot imitate. He must create. The difference between the two kinds of work is clear. The demand brings the worker and the kind of work. All acts of men are good which meet the necessities of growth. The artisan's work meets a demand by its copying and faithful reproduction.

There have been certain characteristics through all history peculiar to the artist and the artisan. The artisan has the characteristic of conservatism. We must honor them when they stood up in self defence against the innovations which they thought would deprive them and their families of their daily bread. The stage driver looked with utter contempt upon the locomotive. Where would the horses go? But they took the stage driver and made him a conductor. (Laughter.) This was in his own state. There were in the United States "case" lawyers and case doctors, who go by what they find in the books, and know nothing else. They follow the model like mechanics. There are case ministers also. They are artisans pure and simple. There are scientists also — not artisans, but pedants—pedlars of knowledge. (Laughter.) The pedant says: "I know it." His whole horizon is closed down and fastened. Galileo produced something, but "it didn't come in." (Laughter.) Stevenson presented the locomotive to the learned men of England, full of knowledge and of knowledge of their knowledge. One said in a kindly spirit, if it should run twenty miles an hour and there was a cow on the track, what would become of the locomotive? That should have annihilated Stevenson. (Applause.) A great scientist denied that a steamer could ever cross the Atlantic, but before his ink was dry the act was done.

By close examination there might be found a few pedants in the profession of teaching. What is education? Each teacher should invent a definition and stick to it till he gets a better. The speaker cited a number of definitions. It was the teacher's work to present the conditions for the outworking of God's design according to God's immutable law. The child gains knowledge by certain fixed, immutable laws, and the work of the teachers is to discover these laws and the conditions of growth. There is but one study in all this world—the study of life and the preparation for life. Death itself is but the preparation for life. The study of history is but the continuation of the study of the lowest forms of life. Who can say they know enough to teach? We talk about methods. He had been accused of inventing one—but he never discovered or invented one. He had found some of God's methods in human growth. Methods! teachers learn them and think they have fitted themselves for their work. Why it's but copying. It is the work of a mechanic—not of an artist. No one can copy the teaching art. It must be learned from a knowledge of the body, the mind, the soul. It can never be imitated. The artist seeks ever. He rests not. He cries give, give me what I may give to humanity. The speaker had met the pedant pedlar of knowlege, and the artist who cries give, give. The pedant pedlars never invent anything. They have but stock arguments against the progress of education. The difference of the two kinds of teachers is marked in the growth of their work.

One word about the selection of subjects for teaching. In the artisan method each subject is separated from all others; but under the art of teaching the subjects are weighed in the development of the human being. Writing or arithmetic in itself has no value. Everything is measured by what we give to others. All branches of studies can be weighed in the light of what they give to humanity. The value given should determine what should be put in the curriculum. The dead languages. You can never read the Greek or Roman soul unless in the Greek or Roman language. There is no neutral ground in training. The giving must begin in the lowest grade—in the kindergarten. There never was such a thing as a lazy child. (Laughter.) I know what you mean, but that's after the child has been two years at school. You never saw a lazy baby. The tearing of things by babies is the beginning of analysis. The whole work in the school is to give to each other. Why wait till they pass the higher grades and the universities before you expect them to benefit the world?

Mechanical training will help the development of motive, the best part of nature. But don't pay the little ones for everything. You develop the mercenary spirit. He did not believe in total-depravity, but he did in total neglect. This system of purchase was continued in the Sunday-school and the college. And then these prize pupils stand out in the markets of the world and ask, what will you give for me? Trained ambition that can't look beyond that which is selfish is the curse of the United States. Why do we have to give prizes? You don't give prizes in boarding houses to the boarders who eat the most turkey. He had not given prizes for years, and he believed the pupils worked better than when he did. The giving of prizes was to atone for lack of ability on the part of teachers. (Sensation.) What sense does spelling develop? Answer that, men and women who study the working and mind of the child. Take grammar. He studied it and hated it, but he now believed it was the first streak of common sense that entered his head. He had parsed Paradise Lost, and it was lost ever since. He would have the essential principles and rules—grammar taught from beginning to end as part of the whole. The old grammar was simple and not so bad, but then there came another book! The pedant teacher always likes a mystery. He was a small boy when he first studied algebra, and he felt a foot higher when he learned that $x+y=b$. He did not know what x or y or b meant, but he felt that a great truth had entered his soul. Col. Parker next told the story of his visit to a Boston school. The teacher had his feet on the desk. The pupils were analysing that beautiful poem, Maud Muller. The teacher yelled down: Next! Stay after school! And then the colonel asked permission to take the class, and taught them with kindness, giving them the whiff of new mown hay and a glimpse at the beauty of the maiden down by the babbling brook. The children were delighted. The two styles, the Boston teacher, and his own, represented the work of the artisan and artist teacher respectively. Throw away the spelling book, *per se*. Aim to develop not the forms but the essence. The sermon on the mount laid down the spirit in which the teacher should approach his work. The grandest sight of all the ages is Christ holding the little child in His arms, saying, This is the kingdom of heaven. Christ saw in that child and in the future the possibilities now presented to the teacher to find out. (Cheers.)

Evening Session.

Over a thousand people were present at the evening session, to hear the discussion of the question, "The Influence of the College on Industrial and Social Life." Among those on the platform were Hon. G. E. Foster, Minister of Finance, Hon. Attorney General Blair, of New Brunswick, and Hon. Mr. Ferguson, of P. E. Island.

President Sawyer, of Acadia College, Wolfville, N.S.:

The teachers of these Maritime Provinces are to be congratulated on the formation of this Association. The Provincial Associations have served useful purposes. They have not outlived their usefulness. But there are advantages in occasionally meeting in larger associations, in forming new acquaintances, gathering stores of knowledge from new fields, and studying the peculiarities and advantages of different systems.

A somewhat extended acquaintance with the teachers in these Lower Provinces has led me to the opinion that they are an earnest, intelligent, and progressive class, whose efforts for the education of the young, and the improvement of the country, are not valued by the general public at anything like their true worth. I believe that our systems of public education are judicious and effective, and that they deserve the confidence of the people. Whatever censors and pessimists may say, we who have known the state of education in these provinces as it was some years ago, and can compare it with the present condition of things, know that "the world moves."

I wish to thank the committee of arrangements for this convention, that they have so distinctly recognized the relation between the schools and the colleges. Though there be no organic connection between these classes of educational agencies, yet there is a close dependence of one on the other. The college needs the common school in order that it may fill the largest measure of usefulness; and the common school needs the aid and stimulus that should come from the college.

In coming to the consideration of the subject assigned for the evening, we find that there are some differences of opinion in respect to the higher grades of education, as well as the lower. Indeed, we are not agreed as to what the higher education is. In all the grades we find that our theories do not take shape in actual facts. While we would fain make ourselves believe that we are walking in the light of *a priori* truths, we often are searching for our way by the tentative processes of experience. Even in so simple a matter as the use of our terms we lack definiteness. The word college, for example, is used with considerable latitude. It is probable that on this occasion we are to understand the term as a designation of the grade of our educational institutions next above our high schools and academies. But, with this application of the term in mind, it may be well to inquire whether it is not properly subject to some other limitations. For the purposes of this evening, as I understand them, it is not intended to use the term as including technical or trade schools. The practical abolition of the system of apprenticeship has rendered it necessary that schools should be organized for teaching the principles and manual practice of various trades and handicrafts. These are valuable institutions, and in a general review of the departments of education they should have a place. But it is by no means clear to me that such schools are properly parts or adjuncts of a college or university. It is probable, also, that the term college was not designed to include, for the purposes of this discussion, our professional schools, though these, too, are a necessary part of a complete system of education. We may ask whether there is not another limitation of our term which it may be well to note? Does it include universities? Probably it was so intended, so far as the term university is popularly applied among us. But possibly it might be better if, in our educational discussions and treatises, the two terms, college and university, were not taken as interchangeable. It seems to me that some things could be affirmed of institutions properly bearing one of these designations, which would not be affirmed of the other. What, then, is the distinction that should be observed between them? The university may be considered as a place for the concentration and advancement of learning. It implies the existence of considerable wealth in the community, and the presence of a class of persons somewhat exempt from the necessity of engaging in the professions or the general business of life. Its primary object is the promotion of original work in the departments of science, philosophy, history, literature, and perhaps art in its highest sense, as in themselves deserving of the expenditure of large sums of money and much labor. The college, on the other hand, exists rather for the purposes of education. In the college we are to keep in view the training of the mind, the development of the powers for effective action, and preparation for the higher duties of life, professional and official, as well as those incident to the more private spheres of service. In the university we are to keep in mind the subjects of study, and the advancement of learning in those particular departments. In the college we are to keep in mind the process of education, and select and arrange our subjects and methods of study with regard to the best possible results in that province. This distinction, it will be observed, does not depend on the size of the institution, or the number of related schools or departments, but on the quality and methods of the work done. It is true that the two ideas may, to some extent, be blended in practice, but an institution will be properly classed according as one of these ideas, or the other, dominates in its practical operations.

The question may be asked: Have we universities? It can hardly be said that we have; except as we permit ourselves to use that term by a sort of courtesy, or as a prophecy of something yet to be. As a people we are not yet wealthy enough, we have not numbers enough in what may be called "the leisure class," our population is not concentrated enough, students sufficiently advanced cannot be found in numbers large enough to permit the creation of such seats of learning. We may hope that we are tending towards a state in which this may be possible. It may be that already in our existing higher institutions work is done to some extent that may be classed as belonging to this advanced grade. But practically, our higher institutions, judged by the demands made upon them, and the principal service performed by them, must be institutions for education rather than the advancement of learning, colleges rather than universities.

Now, in studying the influence of the college as thus understood, on industrial and social life, we may view the subject in various aspects.

It may be thought that the college has nothing to do with the industries of a people. But it could be shown by historical examples that, on the ground of its relations to the common forms of labor in a community, the college could justify its existence.

In respect to the influence of the college on social life, it will be enough for me to affirm that the quality of that life will be better with the college than without it. On what does such an opinion rest? When we analyze the impressions made upon us by national life in the mass, we find that a few elements determine the type. Sparta, for example, is remembered as a military machine, a nation always in camp. For Athenian civilization there stand out for us a few exponents which mark its character. Three or four poets, as many artists, a few philosophers and orators—themselves the product and the creators of what we know as Athenian life; this represents Athens to us. If we should undertake to answer the question, what is it in old England that so wins continually renewed admiration and holds our respect, we should probably be surprised to find how much of it is to be ascribed to the influence of her colleges and universities. If we select out of the literature of the neighboring republic, the works of permanent worth down to the middle of the present century, we shall find that they can be, for the most part, traced to the influence of a single college. It can be shown, historically, that comparatively few elements have marked the character of a people, and that their higher institutions of learning have had an important place in that number. Such institutions have fostered the best development of intellectual life. They have inspired to lofty action, by the example of noble actors. They make the general interest in truth and the advancement of the race to be something more than the average of the interest of specialists in their subjects; for it is the purpose of the college not to make specialists, but to train minds to be open to truth from whatever source it may come, to teach the young to observe that, though by day we see but one sun, yet when the light of that is withdrawn, suns beyond number are revealed to us. It is the object of these institutions to keep alive "the humanities," to cultivate an interest in everything that concerns human welfare, to help the young to discern the principles and laws manifested in the operations of nature, and to have confidence in them and respect for them; and still more, to help them to discover and understand the principles and laws that rule in the department of human actions and relations, and believe in them and have respect for them.

We must remember that the effects thus produced are necessarily very permanent. When one has once come to see what this great system of law all about us and within us is, that knowledge must remain as an abiding possession, and such a one can no more be satisfied with ill-assorted facts and charlatanry. One who has studied human life in the perspective, which history, when it is properly conceived, opens before him, ought to find in it a corrective of the tendency to be satisfied with the gossip of the day. One who has once known the peculiar pleasure that is awakened by literature of a high order, has a well-spring opened in his soul that will be to him a perennial source of delight. Unless our theories of education are all a sham, the youth who are thus educated must be conservators of the noblest possessions of the race, and guides to the noblest achievements.

In answer to the question: Do our colleges accomplish this? We may say: Yes, and No. We must admit that the imperfection that characterizes all human work appears in the outcome of these educational efforts. And yet, to a high degree, the effects described are produced. The influence that proceeds from the college is felt in every department of life; it will be felt more and more.

It may be added, that if the college contains such possibilities of good, it becomes all who are entrusted with its management to be faithful to the responsibilities laid upon them; and further, that it is the duty of the public to respond cheerfully and generously to the support of such institutions.

Dr. Harrison, President of the University of New Brunswick, next addressed the meeting. He said:

It would be showing scant courtesy to our distinguished visitors from the other provinces if he were to trespass to any extent upon the precious time of this long-to-be-remembered evening. He felt himself carried away with the spirit of the occasion. He had had the pleasure of becoming personally acquainted with the venerable Principal of McGill University, with the Rev. the President of Acadia College, the Rev. the President of Dalhousie College, and with the Principal of the Prince of Wales College; he had also renewed his acquaintance with his old and esteemed friend, Dr. Inch, of Mount Allison College, and with two of his former pupils, Prof. Kierstead, of Acadia, and Prof. Roberts, of King's College, Windsor. He could almost wish that instead of separating they could all stay here and work together in building up a university in the fair city of St. John, but as there were grave practical difficulties in the way of such an undertaking, he must dismiss it for the present with the hope that after this memorable meeting they would work on in their own spheres of labor with increased mutual respect and sympathy.

As a member of the Provincial Board of Education it was his pleasing duty to offer a hearty welcome to the large and representative body of teachers. He hoped that their flagging spirits would be braced up and invigorated by the cool air of this pleasant city by the sea, and that after this brief and happy respite from the cares and anxieties of the teacher's life they would go on their educational way rejoicing.

The nature of every true Canadian was full to overflowing with the milk of that human kindness which knows no geographical limit or boundary. It was nevertheless true that for most of us here present the one country in the world which had the strongest hold upon our hearts was Canada. In Canada we were born, or here we expect to find the grave of our rest. Here we must think and act and drink the mingled cup of pleasure and pain during our mysterious life-voyage to the undiscovered country. The welfare of Canada is our welfare and that of our children and of our children's children. Fed by Canada's food, hurt by her calamities, warmed and cooled by Canadian summers and winters it becomes us to look upon Canada and her schools and colleges not with the coldness and indifference of cynics and critics, but with the ardour and enthusiasm of patriots and lovers. Coming to the particular subject in hand, he said the discussion had been virtually begun by Dr. Schurman in his address on the curriculum of

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L. E. WORTMAN, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.

Canadian universities. He cou'd not agree with Dr. Schurman in his proposed substitution of history and English literature for Latin and Greek as a remedy for the defects of our college training. Bacon in his "Advancement of Learning" has said that knowledge is the food of the mind! So in their choice and preference of this food most have a palate like that of the Israelites in the wilderness who were seized with a desire of returning to the flesh-pots, and loathed the manna, which, though food from Heaven, was thought to be less palatable and agreeable. In the same way history and English literature would be most generally acceptable because they have a more savoury relish of the flesh Though Latin and Greek are less palatable, Dr Harrison believed in their efficacy and intrinsic worth; they were still the educational manna, and he regarded the proposal to abolish them as an educational heresy. He would not underrate the value of history and English literature. He feared that Dr. Schurman had unwittingly given the impression to this audience that the study of English literature was neglected in the colleges of our Dominion. So far as the colleges of New Brunswick and Nova Scotia were concerned a great deal of prominence was given to the study of English literature. In the University of New Brunswick our professor in that department was strongly recommended to the Senate by Edward Dowden; the excellent work done in that subject could be judged by the examination papers published in our calendar—and he believed that equally good work was being done in Sackville, Dalhousie and Acadia.

Referring again to the subject in hand he said, that it was of the last importance to the welfare of our Dominion that side by side with her material progress there should be a corresponding cultivation of the higher life. Perhaps it is not too much to say that mere material progress is worthless and useless unless it is accompanied by this higher conception of life and duty. For the attainment of this higher culture colleges are a necessity. The obstacles to acquiring information are so many and great that the average mind at least cannot overcome them without the aid of a preliminary course in arts. It is true that a course in arts is only the beginning of the higher education; but here as in other things the beginning is half the battle, and the man who has had the advantage of a collegiate education can afterwards without too great a strain upon his mental powers go on to that higher culture which will give him power as an active citizen in any business or in any profession. There are problems of life and citizenship which demand for their solution the best trained intellects. Materialism, agnosticism, secularism, spiritualism, communism, the strife between labor and capital, the strife between political parties, the suffering of the poor, the self-indulgence of the rich, these and many other evils suggest problems which can only be satisfactorily solved by men trained and versed in philosophy, in history, in literature, in science, in political economy and in the art of distinguishing a valid argument from spurious imitations of it.

The true life of Canadians consists not in the abundance of the material things which they possess. To eat and to drink and to be clothed and on the morrow to die, surely this is not to be set forward as the end and aim of life. The true life of Canada consists rather in the unseen and silent cultivation in her sons and daughters of a spirit and character growing and forming in obedience to the law of God written in the heart of every man. For the attainment of this end colleges are necessary. There are colleges great and small. The colleges of our Maritime Provinces are as yet small indeed when compared with some of the great colleges of Europe and America, but the masters who command and guide these greater ships of learning are beginning to recognize the fact that side by side with them in their grand expedition against ignorance and mental and moral bondage, there are other little ships which have done admirable service and which have borne great men. It has often happened that when men have been transferred from the smaller colleges to the larger they have been found to stand head and shoulders above their new companions.

The colleges of the Maritime Provinces have produced men admirably prepared for the duties of citizenship, men who fear God, who honor the Queen, and who love their brother-man. *Si quæris monumentum, circumspice.*

[To be continued.]

EXCHANGES.

The *Popular Science Monthly* is doing splendid service in showing the aspects of the great questions of the day from the scientific standpoint. The August number has articles of great value, of which the following are of more than usual interest: "Teaching Physiology in the Public Schools," "Injurious Influences of City Life," "The Beauty of Science." Published by D. Appleton & Co., New York..... *Wide Awake* for August is a fine holiday number and enters fully into the spirit of recreation that should belong to this period. The illustrations and stories are bright and interesting.... *St. Nicholas* for August is chiefly an out door number. In "Tom, Dick and Harry on the Coast of Maine," some racy vacation exploits are recounted. John Burroughs, the famous naturalist, has an article on "Observing Little Things," and warns us of the danger of arriving at hasty conclusions. Altogether it is an admirable number...The *Century* for August keeps up its custom of making this a mid-summer holiday number. The frontispiece is a portrait of Geo. Kennan, the celebrated traveller, at work on his Siberian papers. These papers in the August *Century* are of surpassing interest, and show us a new phase of Russian nihilism. The description of mountain scenery in the Altai region is wonderfully vivid. "The Teacher's Vacation," in the Open Letters is a seasonable and suggestive article.

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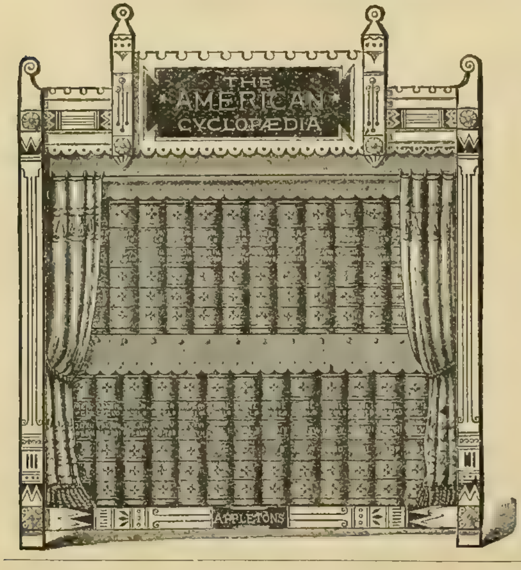

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EDITORIAL NOTES.

AT the late Interprovincial Convention, several speakers put on record their estimation of the REVIEW and what it is accomplishing for education in these provinces. Sir Wm. Dawson said: "Teachers' Institutes in the old time were non-existent. Now there are county, provincial, and lastly, an interprovincial association, which has brought together to-day this large assemblage of earnest and able teachers, as well as the EDUCATIONAL REVIEW, which is marked by a high order of excellence, both in tone and matter," and Mr. Justice King, of St. John, who has an abiding interest and faith in our public school system, said: "There had been a degree of organic union brought about between the teachers of the provinces during the last year by that excellent periodical—the EDUCATIONAL REVIEW—which it had been his pleasure for some time to peruse."

These and other indications point to the influence and popularity of the REVIEW, which it will be the aim of its promoters constantly to increase.

IN this issue of the REVIEW we commence a series of lessons on primary and advanced work in schools. This we hope to make valuable to teachers, and we shall feel obliged to any for suggestions and lessons on school-room topics.

THE Halifax *Herald* and *Chronicle* have had many valuable articles on the kindergarten system during the year. Mrs. Condon's enthusiasm has not, however, been confined to the public press alone. A small grant from the provincial government, to the Truro kindergarten, and its affiliation to the normal school, would confer a boon upon the whole province, as well as upon Truro, and would give the institution an assured stability. The engrafting of kindergarten methods upon our primary education in this manner would be a great public gain from a very small expenditure of public means.

THE address of Dr. J. G. Fitch, in another column, on "Hand-work and Head-work in Schools" will be read with interest. It created a favorable impression at the recent convention. It is conservative in tone; and while Dr. Fitch would proceed cautiously in making any changes in our educational systems, in regard to manual training, he evidently recognizes the necessity for more training in our schools of the hand and eye. Clearly that can be done without turning our schools into workshops. There is a happy mean, and the wide-awake teacher who is adopting kindergarten principles, who is training the pupil carefully in industrial drawing, in penmanship, in teaching him to handle objects and accurately describe them, is taking the first steps toward this training.

IN the September *Century* is an article from the pen of Geo. R. Parkin, M. A., of Fredericton, on Uppingham school, England, and its lamented head-master, Edward Thring. The article was written before the death of Mr. Thring, but its publication has been delayed till the present, when it appears as the leading article of a series of admirable papers on educational subjects. The frontispiece contains a portrait of Mr. Thring, and the article is illustrated by a series of sketches of internal and external features of this great school. Mr. Parkin has approached and performed his part of the work with the instinct of the true teacher and friend. He lets Mr. Thring's work speak for itself. In simple language he has described the noble purposes and lofty ideal of this great teacher and the results accomplished.

Mr. Kingo Miyabe, a Japanese botanist who is pursuing a special course in cryptogamic botany at Harvard is making a collection of fungi on Grand Manan. He will communicate the result of his studies and observations in a paper to the N. B. Natural History Society the coming winter. This will be the first attempt to arrange systematically the fungi of any portion of the province, and the paper and accompanying list will be looked for with interest.

The resignation of Mrs. Carr, Principal of the Victoria School and of the Girls' High School, St. John, has caused deep regret in educational circles, not only in St. John but elsewhere throughout the province. Her influence as a teacher made a permanent impression on the mind and character of those under her charge, and whatever station Mrs. Carr may fill in the future she will be followed by the heartiest good wishes for her happiness.

The N. B. Normal School opened on the first week in September. The English literature subjects for the June examination, 1889, as given by the Chief Superintendent of Education, are: Class I., Royal Reader VI. and Shakespear's "Hamlet." Class II., Royal Readers V. and IV. Class III., Royal Reader IV.

A letter from Japan, from a lady teacher in the Normal School at Shidznoka formerly from Halifax, tells us with what appreciation her copies of the Review were read by the teachers of the Normal School. To show how the Japanese teachers can write English, and also appreciate a good educational periodical, we append the note received by Miss C.:

Normal School, June 20th, 1888.

Miss C——

I am much obliged to you for your having lent me your Educational Review, which gave me and some others so much benefit. Now, I return them back to you with many thanks. One more number of the Review a teacher in my school wishes to have a little longer, so I will return it to you a little after. And I remain,

Yours very sincerely,
Shidznoka, Japan. I. Suganuma.

The importance attached to the kindergarten system by the National Educational Association of the United States is shown by the very influential character of its kindergarten department. The desire to assist the development of the system in Canada was very gracefully and effectively indicated by the following telegram, conveying a resolution of congratulation to the "Frœbel Institute," of Nova Scotia. No separate section of our interprovincial convention has elicited so much attention from our co-workers in convention on the other side of the line.

COPY OF TELEGRAM.

San Francisco *via* Truro, August 14.

To Mrs. Hinkle Condon :

Kindergarten Department of National Educational Association passed resolution of congratulation to "Frœbel Institute of Nova Scotia." Please present the same.

Sarah Cooper,
President Golden Gate Kindergarten Association.

The Truro "Kindergarten Committee," virtually part of the "Frœbel Institute," are requested to receive this resolution as addressed also specially to them, as *their work* is the special object of sympathy.

The notice of the opening of the N. S. Normal School in November appears in another column. In addition to the staff of skilled instructors in this institution, the student teachers are to receive the advantages of kindergarten instruction. We congratulate Principal Calkin on this step, which cannot fail to give a wonderful impetus to primary education throughout the province.

The annual gathering of the Bands of Mercy in connection with the S. P. C. A. took place on Saturday afternoon, September 8th, in the Mechanics' Institute, St. John. No more pleasing and encouraging sight could be witnessed than the throng of bright faced happy children gathered together for the purpose of renewing their pledge and to listen to addresses and exercises, the object of which was to stimulate their interest in the humane treatment of animals. Mr. John Sears, President of the S.P.C.A., gave an address, in which he explained the objects of the Bands of Mercy and their progress in England and on this continent. Miss Murray, President of the Ladies' Auxiliary, and patroness of the bands, addressed the members, urging them to greater activity in the work. The prize for the best essay on "Personal Observations on the Habits of Animals" was given to Ernest Smith of the Centenary Band. The pledge, recited by all the Bands standing, was—"We agree to be kind to animals, to do all in our power to protect them from cruelty, and to promote their humane treatment." The effect of such gatherings as these, and the instilling into young minds kindness towards the lower animals, cannot fail to be attended with the happiest results. And the efforts of the ladies and gentlemen who are devoting themselves to the furtherance of this movement are worthy of imitation.

SCIENCE FALSELY SO CALLED.

Now that we have an outline of oral lesson work on nature in our common school curriculum, many people think we should begin soon to feel the beneficial effects of such a system. But we fear such are doomed to disappointment. The mechanical teacher who possibly has the best disciplined school in the district, who is a perfect drill in arithmetic, spelling, geography and the like, may be a complete failure as a science teacher. Much more likely is the one with little system, and no power of drill. Most astonishing misconceptions of the purpose and nature of this portion of the course have appeared in quarters whence better should be expected. The teacher in the graded school wants to know just exactly what the pupils are to be examined upon. The principal prescribes so much of some book. The pupils can now be prepared for examination. Every question is in the book. To the mind of the teacher and the principal there is nothing absurd in this—it is only fair. Or, if it looks like cram, why it is the council of public instruction which is to blame. They object to all this science-teaching any way. Science teaching! why it is simply dogma cramming. A theology without a God and without a nature—mythological anti-science. *Book Question:* "What is the difference between a cricket and a horse?" *Answer:* The cricket has no backbone, the horse has." It is a matter of faith not of sight. The little boy thought the cricket's backbone was stiffer than the horse's, from his experiments with them. But the teacher tells him the correct answer for the examination is directly the opposite of his observations. The boy submits, and tries to learn science by remembering the unseen and unknown difference. *Question:* "What is the calyx made up of?" *Answer:* "Sepals." But when you give the little fellow a buttercup and ask him to pull off all the sepals and count the number of them, he looks all over the plant, wondering where the sepals really might be. *Question:* "What is thunder?" *Answer:* "The noise attending the passage of electricity between the earth and a cloud." The answer is rolled out simultaneously in chorus at the public examination with a vim suggesting a current of cloud electricity. But all their knowledge was discharged in that one bolt. There was no science, no correlation of facts, simply words. Many a time and oft did miniature thunderstorms and lightnings play in their golden hair as the vulcanite comb was drawn through it, or the cat's fur was made to crackle and sparkle in the dark. But what in the thunder had such child's play to do with the grading examination? Any teacher found drilling scholars to memorize any such answers as science teaching should be dismissed. It is totally subversive of the very object for which such work was prescribed. How, then, should principals examine pupils in common school grading. We would suggest questioning somewhat as follows: "What minerals have you examined in school?" The amount of ground covered will be indicated by the answer. Then select one on the pupil's list, and question him as to the properties which his examination should have revealed. A half a dozen good oral object lessons, each on minerals, plants, animals, physical properties, chemical properties, natural phenomena, etc., per term, might be all the time devoted to this teaching. By all means let them be object lessons, and let the teacher select the objects from those most common or of most importance in the particular locality. The only limitation we would recommend is so many lessons on each sub-division to prevent the total neglect of any portion. But let the particular objects be left to the taste and circumstances of the teacher. Do not lecture them on the insects of South America, or cause them to memorize facts about those of France. Teach the pupils to observe and know our own. Teach them to *observe*. And the grading or promotion examination on nature lessons, according to our idea, should not be a test or measure of the amount of facts memorized, but of the amount *systematically observed*. Under such a system "Nature Lessons" will not be an anti-scientific cram, but a relief from mnemonical work and therefore a rest to the pupil. It will not over-crowd the teacher, because it does not fix an absolute amount of work to be done, but only a certain amount of attention which will allow of the free exercise of the teacher's own originality. The teacher should be a student of nature, whose heart is in the work. Those who wish simply to earn a little money for a few years, will want to know only just how much of a certain book the pupils "must be made to learn." The object of nature lessons is to stimulate the young citizen to be an accurate observer, to read correctly his environment, to discover as much as possible of the truth of nature, to know its laws, so as to obviate the penalty of transgressing them, and to gain the advantage of making them his servant.

Mr. W. F. Ganong, M. A., of Harvard University, Cambridge, Mass., is collecting information and will publish shortly an article on the origin of geographical names in New Brunswick. He would be glad to receive any information from those who are specially interested, and who may have in their possession any facts bearing on the subject.

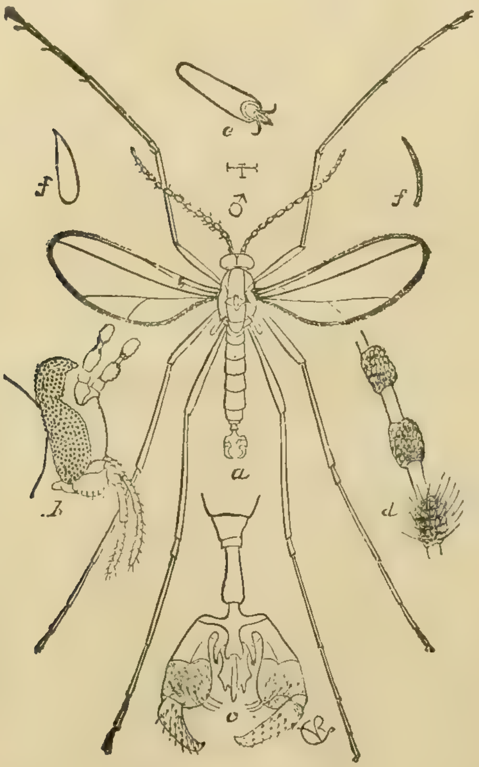
FERNDALE SCHOOL.

No. XV.—The Clover Seed Midge (*Cecidomyia leguminicola*, Lintner.)

Teacher. What insect did we consider in our last lesson.

Scholars. The Wheat Midge and the Hessian Fly.

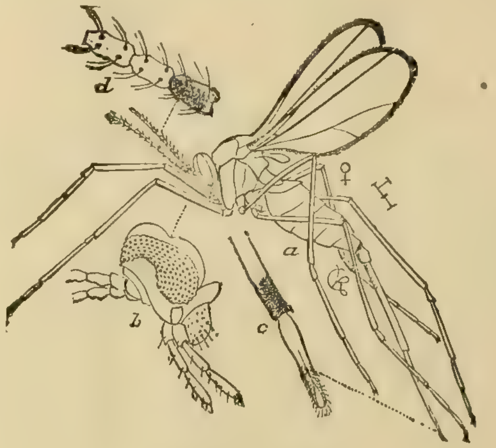
T. To complete our lessons on the midges I take another one of them to-day—the third and last which we shall notice. This one does to the clover-seed just what the Wheat Midge does to the wheat-seed. The fly is so small that it could stand inside of a capital letter, such as an O, in this article. Here we have the male and female magnified very greatly so that all their parts can be distinctly seen.



The Male, *magnified.*

The sign ♂ signifies the *male* insect and the crossed lines above its real size. It is very much of the size and appearance of the Wheat Midge. *a* shows the peculiar clasping organ at the end of the abdomen. *c* is the same still further magnified. *b* is the head still further magnified, showing the large compound eye, the base of the fifteen-jointed antennæ, and the small four-jointed palpi or feelers. *d* a portion of the antennæ highly magnified. *e* the claws at the end of the legs. *f* the dusky hairs on its wings and body highly magnified.

The sign ♀ signifies the female insect, and the lines near it its actual size. The abdomen at *a* terminates in a long tube shown highly magnified at *c*, which is called the ovipositor, because it is the organ which places the egg in the minute flower of the clover. *b* is the head highly magnified, showing the lower joints of the sixteen or seventeen jointed antennæ and the small four jointed palpi. *d* shows a portion of the antennæ highly magnified.



The Female, *magnified.*

S. When the fly is so small, I suppose one could hardly see the egg with the naked eye?

T. True, one hundred of them would make a line about an inch long.

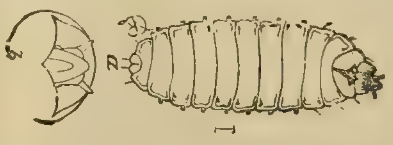
S. When are they laid?

T. As it lives on the young clover seed when do you think?

S. When the clover blossoms.

T. Exactly. In May when the clover blossoms. In ten days they hatch into orange-colored footless maggots which feed upon the growing clover seed, and are about the twelfth part of an inch when full grown. Here we have it magnified at *a*, the small line by its side showing its real size. At *b* its head is shown still further magnified.

When it has eaten as much of the soft juicy growing seed as it wants it falls to the ground towards the first of July, seeks cover, spins a minute silken cocoon, changes into the pupa, and after ten days in the chrysalis the perfect fly emerges ready to deposit its eggs in the second flowering crop of clover towards the latter part of July. The second brood may partly emerge in the fall and partly next May.



The Orange-Colored Larva, *magnified.*

S. Does it do much harm?

T. Let us see. Professor Lintner, entomologist of the State of New York, discovered its existence in 1877. Ontario about that time was raising annually about $600,000 worth of clover seed and was exporting it. In 1881 it was noticed in Ontario doing some mischief. By 1885, Ontario stopped exporting and had to import clover seed.

S. And have they found a remedy?

T. Yes, as soon as they understood its habits. They pasture the clover fields until about the middle of June. What happens then?

S. All the clover blossoms and the midges' eggs are eaten up.

T. They then allow the clover to grow and get a good fall crop for seed.

S. Should not such information be given to all our farmers?

T. You are right, Mr. Fletcher, our Dominion entomologist, had cuts and a description of the fly sent to every part of Canada as soon as it was found to be doing mischief in Ontario. Some people don't pay very much attention to these things; but the young farmers who leave this school, I hope, will keep their eyes open.

S. But would we not need a very expensive microscope to magnify a small fly, like a sand fly, to see whether it might be a wheat or clover seed midge?

T. Oh no, ordinary lenses costing from fifty cents to very superior ones costing not much more than two dollars, will be quite sufficient for most purposes. Just such a lense every one should carry about in his pocket for botanical or any other purpose. A good lense would be found interesting and useful to every person, in an office or on a farm.

N. B. TEACHERS' INSTITUTES.

Carleton County Teachers' Institute will meet at Woodstock, on Thursday and Friday, September 27th and 28th. Exhibitions of manual work in schools will be given.

St. John County Teachers' Institute will meet in St. John, on the 27th and 28th inst.

The tenth annual session of the Charlotte County Teachers' Institute will be held at St. Stephen on Thursday and Friday, September 27th and 28th.

The Westmorland County Teachers' Institute will meet at Dorchester on the 27th and 28th inst. Prizes will be awarded for the best specimens of work from schools throughout the county.

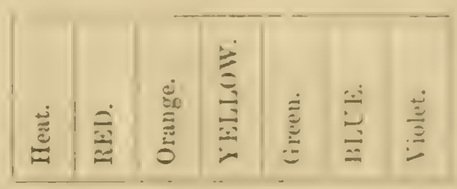
THE SCHOOL ROOM.

Lessons on Color.

([illegible])

No season gives so good an opportunity for the study of color as the autumn. The nearly universal prevalence of the greens and blues of early summer are succeeded by the reds and yellows and browns of mature vegetation. In some people the color-sense is more or less absent. But with a greater number there is a confusion in naming colors which can be recognized, simply on account of a lack of proper training. In several occupations, as for instance in railroading, the accurate distinction of color signals is absolutely necessary, so that applicants are tested for accuracy of the color-sense before they are employed. But the training in the accurate naming of the tertiary colors and the various shades, hues and tints is so defective, that in the study of the *algæ, fungi,* or any department of science in which the color is an important characteristic, we are apt to get wrong ideas of color from the descriptions. For instance, in Nova Scotia, N. A. Calkins' Primary Object Lessons are recommended to our teachers; and in the other provinces as well as in the United States we find his classification in his book and on the charts to be at variance with high English authority and our general usage. And when we find doctors differing, it is no wonder that the uneducated color sense of the ordinary man or woman should be found more widely diverging.

The teacher is assumed to know that white light is a combination of all the colors seen in a well developed rainbow; that it is caused by almost infinitely minute vibrations of what is called the luminiferous ether. There is very plain evidence to show that when a ray of white light falls on a prism properly situated and is bent by passing through the prism, that the more rapidly vibrating rays are bent most. The white light ray is decomposed as follows:



There is satisfactory evidence to show that the violet rays produce the sensation of violet in the retina of the eye because they vibrate about twice as fast as the red. We have here what is called the colors of spectrum, the true scale of pure colors. For instance, the darkest red or radiant heat rays may vibrate about 400 trillions of times per second, while the extreme violet vibrates nearly 800 trillions of times per second. There are then many thousands of pure distinct colors in white light, beginning with the dark reds, which become brighter as they vibrate more rapidly and change into the color of the oranges, then of the yellows, then of the greens, and so on. Spectroscopists can name pure colors more accurately than the artist. They can speak of the yellow of a rate of vibration say of 530 trillions per second, or 531, or 532, or 548, or 549, etc., etc.

But in the mixing of colors we find that a red and a yellow produces orange; a yellow and a blue, green; and a red and a blue, purple or violet. But by no mixture of colors can we produce a red or a yellow or a blue. We therefore call these *primary* and the other, *secondary* colors. The combination of secondary colors produce what have been called *tertiary* colors. We give the scheme below. The teacher should have colored crayons, colored thread which can be wound around cards; and the more painstaking may use paints or water colors. The best primary color representatives are for red, *carmine;* for yellow, *chromo yellow;* for blue, *ultramarine.*

Lessons for Advanced Classes.

1. Secondary Colors.

Prove by mixing colors with crayons on the blackboard, or with paints or water colors on paper, that these

Primary colors make these *Secondary* colors.

Red, Yellow,	...................Orange.
Yellow, Blue,	...............Green.
Red, Blue,	...................Purple or Violet.

2. Tertiary Colors.

Secondary.	*Tertiary.*
Orange, Green,	..........Olive (or Citrine, *Calkin.*)
Green, Purple,	.........Slate (or Olive, *Calkin.*)
Orange, Purple,	..........Brown (or Russet, *Calkin.*)

3. Complementary Colors.

Red, yellow and blue, are the primary colors making white light. A complementary color is one which will make white with the given color. (In the mixing of paints a gray instead of a white is produced for reasons not necessary to explain at present.)

∴ Complement of Red=Yellow+Blue=Green.
" " " Yellow=Red+Blue=Purple.
" " " Blue=Red+Yellow=Orange.
And ∴ complement of Green=Red.
" " " Purple=Yellow.
" " " Orange=Blue.

The complement of a color is the color which with it theoretically completes a white, which is the sum of all colors.

4. Effect of Complementary Colors.

Red surrounding *white* fatigues the red-perceiving element of the eye, which is equivalent to taking some *red* out of the *white*, and makes the *white* therefore look *greenish.*

Yellow surrounding white, in like manner, would deaden the eye to a portion of the yellow in the white, and would therefore give it a *purple* tinge.

Blue near white, in like manner, would bring out the *orange.*

Green would bring out the *red, purple* would bring out the *yellow*, and *orange* would bring out the *blue.*

Proofs.—Put cards of each of these colors on a white sheet of paper—one at a time; look at the centre of the card steadily without moving the eye for one minute; slip the card suddenly off the paper, keeping the eye still directed to the same spot, and the shape of the card with its complementary color will be seen for a short time on the white paper. (Inferences in next lesson).

Lessons for Primary Classes.

1. (*a*) Show them the primary color *red*; (*b*) Let them select the *reds* from a chart, colored crayon drawings, or from cards with colored worsted wound on them; (*c*) Let them select the *reds* in any things which can be seen about the schoolroom or from it; (*d*) Let them mention all the red things they can think of, such as an apple, a brick, the tongue, blood, clouds at sunset, etc.

2. Follow the same order (*a*), (*b*), (*c*) and (*d*) with *yellow.*

3. Follow the same order (*a*), (*b*), (*c*), (*d*) with *blue.*

4. Review by (*a*) asking them to name the reds, yellows and blues on charts, worsted cards, or colored crayon drawings on the blackboard; (*b*) To name the three colors visible in objects around them; (*c*) To name red, yellow, and blue objects natural or artificial from memory.

The English system of spelling (I protest against its being called orthography) is a labyrinth, a chaos, an absurdity, a disgrace to our age and nation.—*Sir C. E. Trevelyan, K. C. B.*

It cannot be denied that the English language is shockingly spelled.—*James Hadley, LL.D., late Professor of Greek in Yale College.*

Hand-Work and Head-Work in Schools.

[Paper read by Dr J. G. Fitch before the Interprovincial Convention July 18th, 1888.]

There has been a strong wave of public opinion of late in favor of what is sometimes called Technical Education, or Manual Training. These phrases are used in various senses, often with some vagueness, and by persons who have very different objects in view. But they have become popular, and it may be well to examine into the two or three very various meanings which are attached to them.

There is, first of all, the desire to obtain such instruction in various forms of handicraft as may prepare the artisan for his special employment, and may make all the difference between a skilled and an unskilled workman. Those who urge this view are anxious to secure the industrial success of the nation to which they belong, and to obtain a good supply of the trade and manufactures of the world.

Then there are those who, without seeking to prepare the young scholar for the particular form of handicraft by which he is to get his living, wish to provide for him the means of obtaining such general manual and scientific instruction as shall make him readier for any form of skilled industry which in future life he may happen to choose.

A third class of advocates of manual training urge that in all our systems of general education, the memory, the judgment, and the purely intellectual faculties have been too exclusively cultivated, and that the discipline of hand and eye, and of the bodily powers generally, has been too much neglected. The Spartan training of the bow and the palæstra proceeded on the assumption that in fitting a man for the business of life we have to consider, not only what he knows, but what he can do. Is he deft with his fingers? Can he run and swim, handle tools, use all his physical powers with promptitude and energy? If not, the Greeks would have said he is not a well trained or complete man. His education is deficient.

There is a fourth class of persons who rank as advocates of industrial education because they dislike intellectual training for the poor and the humbler classes altogether. They say in effect: We must have a *proletariat*. It is fitting that there should be hewers of wood and drawers of water. Let us train the lowest class of our people on the supposition that they are to fulfil this function. For them strength of limb, hardihood and handiness are needed. Books, and the sort of aspiration which is encouraged by books, would only tempt them into employments wherein possibly they might compete with persons of a higher social level, and become inconvenient rivals. The education of the artisan should not be too ambitious. It should be designed to fit him for the humble work to which the circumstances of his birth have called him, and to keep him in this lower rank. This sort of reasoning is hardly avowed, but it closely underlies some of the arguments we occasionally hear used in England on this subject. Under the disguise of a solicitude in favor of more practical training for the ploughman and the laborer, there lies in many minds a deep distrust of the value of mental training altogether, a desire to use the common schools as a means of maintaining the social order, of repressing inconvenient social or intellectual ambition, and a wish to restrict the instruction of the artisan classes to the special work of their trade; not necessarily because they will thereby do that work better, but because they may be practically disqualified from attempting any other.

For the present we need not [illegible] on the [illegible] of the phase of the last class [illegible] for the [illegible], with which I hope this audience will [illegible] ating them utterly. But [illegible] views form a larger class than is generally believed. The other three views of technical or industrial training already described in outline, can all be defended effectively, though on very different grounds. And we may be helped to discriminate between them, and to avoid confusion, if we consider in what way each of the three other purposes I have described has been attained, or may be attained in practice. An illustration or two will suffice:

Last year I visited Belgium, a small country, with a total population hardly larger than that of the city of London. In that prosperous and industrious community great attention has been given to the whole problem of industrial training, both from the manufacturing and from the educational point of view.

At Courtray there is the *École des Arts et des Métiers*. Its professed object is to encourage the introduction of new industries, to form good workmen and good foremen, to inspire them with the love of work and with habits of order, to impress them with the sense of social and religious obligation, to increase the means of subsistence and to arrest the progress of pauperism.

The institution with this large and comprehensive programme has a large building devoted partly to the purposes of general instruction and partly to the ateliers or workshops. The minimum age of admission is twelve, but the ordinary age is fourteen. The course lasts three years. No one is admitted who has not received a fair elementary education.

The course of general instruction comprises, in the first year, Drawing, Arithmetic, French Language, Practical Geometry; in the second year, Drawing, French, Experimental Physics, Mechanics, Geometry, Inorganic Chemistry; and in the third year, Drawing, Applied Mechanics in its application to trades, Knowledge of Materials, Organic Chemistry, Industrial Economy, the calculus.

Five ateliers are attached to the Institute: (1) Mechanical construction. (2) A foundry. (3) Furniture. (4) Electricity and its applications. (5) Hosiery. (6) Weaving. Each of these is under the care of a skilled director, chosen partly for his practical knowledge of the business, and partly for his scientific acquaintance with the principles on which the particular industry depends. The workshops are real places of business, and are not educational only. They produce machines, electrical and other apparatus, furniture, and articles of many kinds, which are sold in the market at a profit. A substantial part of every day is spent by each student in the workshops, the work being regularly graduated in difficulty and carried on under supervision. But it is notable that from two to three hours per day are devoted to ancillary studies, not directly mechanical, but calculated to secure *pari passu* the development of the students' intelligence. Hence, exercises in language are continued during the whole course. Drawing, design, and geometry are part of the routine prescribed for every student, while courses on electricity, chemistry, strength of materials, mechanics, etc., are given to each group of students to correspond to the particular character of the department of industry to which they are severally attached. In the last year there is a special course of lectures on Economic Science and the laws which regulate industrial life and progress—*e.g.* Production, Division of

Labor, Capital, Money, Banking, Partition of Profits, Partnership, Wages, Trade Unions, Strikes, Savings, Investment, Credit, Direct and Indirect Taxation. Visits to neighboring factories and industrial centres are regularly organized, especially in the third year of training, and after each such visit a full account, with illustrative drawings and descriptions, is required of each pupil. An elaborate scientific and general library, with abundance of drawings and plans of famous machines and factories, is accessible to the students.

Now, the object of such an institute is technical instruction in its definite relation to the particular form of skilled industry which the student proposes to adopt as the business of his life. It has an essentially economic and industrial purpose. That purpose is to provide fully for the future masters, foremen, and captains of industry a sound professional training. But it is to be observed, that from the first, mental cultivation by means of language and abstract science, and the investigation of principles, is regarded as indispensable parts of this training. There is, on the part of the enlightened founders of this institution, no belief in any antagonism or inconsistency between head-work and hand-work. The two are regarded as inseparably connected.

Another form of institute is the *Ecole Industrielle*, annexed to the *Musee Royal de l'Industrie*, at Brussels. It is carried on mainly in the winter, from October to May; it receives pupils after the age of fourteen, and it also takes many students who during the day are employed in shops, warehouses and factories, and who seek to increase their knowledge. Here are large class-rooms, lecture-rooms, apartments for study, libraries, and the general object is, not to prepare the learner for any specific form of industry, but rather to place within his reach the particular kind of scientific or artistic training which is most likely to be useful to him in the calling he intends to follow. Here drawing, designing, geometry, form the staple of the instruction; but physics, chemistry, electricity and other branches of applied science are dealt with by special professors, and a course of lectures on economy and commercial law, and industrial legislation generally, is open to all the students.

But here the ideal technical education is not exclusively practical. The great aim is to make of the intending workman, first of all, a student, and a capable draftsman, able to observe the special phenomena of his own industrial pursuit, and to describe it, and, above all, to familiarize him with so much of the philosophy of the subject as may explain the nature of the material he is to handle, and the natural forces he is to employ.

I spoke of a third view of the subject of technical instruction—that which regards the training of the hand *per se* as an essential part of human culture, apart altogether from its value as a help in doing the business of life. The advocates of this view cite Rousseau, and Frœbel, and Pestalozzi, and urge with truth that the brain is not the only organ which should be developed in a school; that to do justice to the whole sum of human powers and activities there should be due exercise for the senses, and definite practice in the use of the fingers and the bodily powers. They do not want to specialize the work of the primary school with a view to the production of economic results. One of the ablest of the United States superintendents of public schools puts this view clearly: "The object of the public school is education in its broadest sense. If industrial training cannot be shewn to be education in this sense, it has no place in the public school. We have no more right to teach carpentry and book-binding than we have to teach law and medicine. The supreme end of education is the harmonious development of all the powers of a human being. Whatever ministers to this end is education; whatever interferes with its accomplishment, no matter how valuable it is, lies outside of the elementary school."

A true psychology, when it comes to be applied to the practical business of teaching, shows us that the acquisition of knowledge is not the only means by which the human soul can be enriched, and the future man is to be provided with his outfit for the business of life. His training should of course enable him to know much that he would not otherwise learn. But it should also enable him to see much that he would not otherwise see, and to do what he could not otherwise do. It is not merely by receiving ideas, but by giving them expression, that we become the better for what we learn. A thought received, and not expressed or given out again in some form, can hardly be said to have been appropriated at all. But there are many ways in which a thought can find utterance. It may express itself in words, or it may express itself by delineation, design, by invention, by moulding, or by some product of the skilled hand or the physical powers and the finer sense. An education which proceeds on the assumption that the only way in which thought and power can express themselves is by the medium of language, is essentially incomplete. Every school numbers among its scholars some who dislike books, who rebel against mere verbal exercises, but who delight in coming into contact with things, with objects to be handled, with the realities of life. And a school system ought to be so fashioned as to give full recognition to this fact. We cannot permit ourselves, of course, to be wholly dominated by the special preferences and tastes of individual scholars; but we ought to allow them fuller scope than has usually been accorded to them in educational programmes. A late eminent school master—Mr. Thring—was fond of saying, "Every boy is good for something." He did not believe in the existence of a good-for-nothing child. He thought that in the most perverse and uninteresting scholar there were the germs of goodness, aptitudes for some form of useful activity, some possibilities, even of excellence, "would men observingly distil them out;" and that it was the duty of every wise teacher to find these out, encourage their development, and set them to work. We make a grave mistake if we suppose that all good boys should be good in one way, and that all scholars should be interested in the same things and reach an equal degree of proficiency in all the subjects of one curriculum. This is, in fact, not possible. Nor even if it were possible, would it be desirable. So one of the strongest arguments in favor of the recognition of manual and artistic exercises in our schools, is that by them we call into play powers and faculties not evoked by literary studies, and in this way are able to give a better chance to the varied aptitudes of different scholars. Boys and girls do not always like the same things, The world would be a very uninteresting world if they did. A school course, therefore, should be wide enough and diversified enough to give to the largest possible number of scholars a chance of finding something which is attractive to them, and which they will find pleasure in doing.

We have in England some experience which is well calculated to emphasize this larger view of the true scope of popular education. Connected with all our public elementary schools, in which nearly 5,000,000 of children are now in daily attendance, there are infant schools or classes, designed mainly for scholars below and up to the age of 7. Up to 1880 the main subjects of instruction in these infant departments were the rudiments of reading, writing and arithmetic, with a few occasional lessons on objects, and on form, and color, and the chief test of the efficiency of such schools applied by the inspector was an examination in the elements of reading, writing and arithmetic. But when the code of instruction was recast seven years ago, the requirements of the infant school were so enlarged as to include not only reading, writing and arithmetic and lessons on objects and on the phenomena of nature and of common life, but also varied and interesting manual exercises and employments. And since that date no infant school has been able to claim the highest grant unless it satisfied the Inspector in this last particular. In other words, the kindergarten system and the little gifts and manual occupations devised by Frœbel have become a recognized part of the system of early training in the English schools. So you have marching and drill, plaiting and moulding, the building up of wooden bricks in different forms, drawing, cutting little patterns, weaving, and many other employments designed to give delicacy to the touch, keenness to the observant powers, a sense of beauty in form and colors, and the power to use the fingers with dexterity and care. Teachers have been specially warned in the instructions to Her Majesty's Inspectors that it is of no use to adopt the gifts and mere mechanical exercises of the kindergarten unless they are so used as to furnish real training in observation, in accuracy of hand and eye, and in attention and obedience.

Two results have followed the trial of this experiment. It has been found that the infant schools have become much more attractive to the little ones and to their parents, that order is more easiy obtained, and that the infant schools are happier and more cheerful places than they once were. And the other result is not less important. It is found that children who have been thus trained pass the simple examinations in reading, writing and arithmetic, appropriate to the eighth year, not less satisfactorily and much more easily than before. The withdrawal of some of the hours of the day for varied manual occupations, so far from diminishing the chance of progress in the ordinary departments of school instruction, has actually had the effect of accelerating that progress, by means of the general quickening of intelligence and increase of power developed by the kindergarten.

And so the question naturally arises: Why should exercises of this kind cease when a child leaves the infant school at seven years of age? Why should they not be continued further? Relatively to his needs and his general development, is not manual and physical training as important through the later as through the earlier stages of his education?

It cannot be said that the theory underlying these questions has been answered satisfactorily to a very large extent in Europe; or that the best educational authorities are giving much effect to it. In Sweden, under the name *Slojd* there is much exercise in wood carving and in the use of tools. At Gothenburg and at Naas manual instruction is begun at the age of ten or eleven, and the scholars are drafted into the workshops for two or three hours of every week. There is a carpenters' shop, a forge, a room for the cutting and manipulating of paper patterns and ornaments, a painting and decoration school, and a factory for the making of baskets and other fabrics for osiers and toys. The object of the first year's course is mainly to give to the pupil not merely general aptitude but a respect for manual labors, and to enable him to discover his own special taste. In this way he is helped in [illegible] year to discover his own *metier* and to devote himself to it. In the words of one of the ablest writers and observers of the system, M. Sluys, of Brussels: "The object aimed at is purely pedagogic. Manual labor is considered as an educational instrument, holding a rank equal to that of other branches of the programme."

There is a remarkable school in Brussels called the Model School, which provides for pupils from the age of six to sixteen, and gives a very efficient and liberal education, including language, mathematics and physical science according to the most approved modern types. In this school the experiment has been tried of carrying forward the theories of Frœbel all through the classes from the lowest to the highest. Up to six the ordinary employments of the kindergarten are systematically pursued. From six to eight, similar exercises of a more artistic character, chiefly modeling, are used. From eight to ten the chief employment are those included under the general heading—'cartonnage'—the cutting out and fixing paper patterns in all sorts of geometrical and ornamental forms. From ten to twelve wood carving is the chief employment, while in the higher classes artistic and decorative work in wood, metal and other materials is required from every pupil.

Let me give you an example of what was going on in a class of children about ten years old which I found at work. The scholars were arranged round the walls of a room where there was a continuous black-board, breast high, divided so as to give one compartment for each child, and to furnish him on a little shelf with chalk, a graduated metrical ruler, some plastic clay, and a little wooden instrument for fashioning it. The teacher stood in the centre, and gave the order, "Draw a horizontal line five centimetres long." When he saw this was done, he said, "Now draw another line three centimetres long at an angle of 45 degrees." By successive directions, he caused the scholar to produce a very pleasing geometrical pattern, which of course was pre-determined on his part, but which was only gradually evolved. When this was finished, he directed them to take the clay and form round the border of the figure, a frame of a given width and thickness. Great pains were taken by the children to fashion this with care and finish. Afterwards he desired each to add according to his own taste, some additional ornament; and some added triangular or semi-circular pieces of clay or chalk lines to the design, so that every compartment of the black-board presented at the end of the lesson a different pattern. Now here was a exercise not only in accurate observation and in tactual skill but also in intelligence, close attention, in arithmetical measurement, in taste and in invention. I found also that for each of the several forms of manual exercise adopted in this school—for modelling, for basket making, for wood carving, and for working in metals, the teachers had been at the pains to make out from the results of their experience a special tabulated report, showing the effect of the exercise on general power, on the habit of attention, on order, on cleanliness, on the æsthetic faculty, on physical vigor generally, and on manual skill. All the exercises did not profess to serve equally the same purpose, but each was found in its own way to serve one or more of these purposes in different degrees.

And the chief points noticeable in all these exercises are: (1) That they are always connected with drawing, measurement, accurate knowledge and thinking in some way, and are never isolated, or simply manual. (2) That they are superintended by the director of studies and co-ordinated with other work, not handed over to artisan specialists, and (3) that these manual exercises do not occupy more than two hours a week.

There is, in short, in the view of the directors of such a school, no antagonism between the intellectual and the physical training, no attempt to make one the substitute or rival of the other; but a desire rather to make the whole training of the man more harmonious.

All these experiences point to the need of some caution and foresight in dealing with the problem of technical instruction. We may admit that for industrial purposes special hand training is indispensable; that even for them whose *metier* is not yet discovered but who are probably to join the ranks of the industrial classes, some more of such training is needed and also that for those whose pursuits are to be mainly intellectual and who are not likely to be called on to exercise their hands, some general training in handiness is desirable.

Prof. Fiske has wisely said, "In a very deep sense all human science is but the increment of the power of the eye, and all human aid is the increment of the power of the hand. Vision and manipulation—these in their countless, indirect and transfigured forms, are the two co-operating factors in all intellectual progress." But when this is admitted, we cannot fail to recognize that after all the main factor in both art and science is the intellectual power, the reflection, the knowledge, the spiritual insight which lies behind the merely physical power of vision and manipulation, and which give to these powers all their value.

We must hold fast to the belief that mental culture is the first business of a school and ought never to be permitted to become the second. The reaction from excessive bookishness, from the rather abstract character of mere scholastic teaching is on the whole, well justified; but the opposite of wrong is not always right; and it would be very easy to make a grave mistake by emphasizing too strongly the value of manual exercise, and making too great claims for it.

For what, after all, is the main function of the teacher who is seeking to give to his pupil a right training, and a proper outfit for the struggles and the duties of life? It is, no doubt, to give a knowledge of simple arts, and of those rudiments of knowledge which, by the common consent of all parents and teachers, have been held to be indispensable; but it is also to encourage aspiration, to evoke power, and to place the scholar in the fittest possible condition for making the best of his own faculties and for leading an honorable and useful life.

If this be so, we have to ask what, among all possible exercises and studies, are the most formative and disciplinal. Darwin has shown us that by the law of what he calls "concomitant variations," there is such a relation between powers and organs that the cultivation of one leads by a reflex action to the strengthening of the other. You cannot, in fact, call into active exercise any one power without *pro tanto* making the exercise of other powers easier. But here we must discriminate. This correlation, this mutual interchange of power does not act uniformly. Take an example: You want, it may be, to give to a large number of recruits, none of whom have had any previous practice, a knowledge of military evolutions, the power to handle a rifle, and to do the duties of camp life. Say that half of them are clowns, fresh from the plough, and the other half are men of similar age who have had a liberal education. Both groups are equally unfamiliar with what they have to learn, but there is no doubt as to which group will learn most quickly. The clowns will need hard work to bring them into discipline; they will misunderstand commands and be clumsy in executing them. But the greater intelligence of the second group will be found to tell immediately on the readiness with which they see the meaning of the manœuvres, and on the promptitude and exactness with which they perform them. The mental training has here been a distinct help to the mere physical exercise. But it cannot be said in any similar degree that the handicraftsman is a likelier person than another to take up intellectual labor with zest, and to be specially fitted to do it well. Ever since the time when Socrates paid his memorable visit to the workshops of Athens, it has been a familiar part of experience that your mere workman may, though skilled, be, so far as his understanding is concerned, a very poor creature, *borné* right and left by the traditions of his craft, and by rules of thumb, and with very confused and imperfect ideas about matters outside the region of his own trade. The use of tools, though a good thing, is not the highest, nor nearly the highest thing to be desired in the outfit of a citizen for active life. The difference between a handy and an unhandy man is no doubt important all through life; but the difference between an intelligent, well-read man, and another whose mind has been neglected, is fifty times more important, whatever part he may be called on to play hereafter. It is quite possible so to teach the use of tools that the teaching shall have little or no reflex action on other departments of human thought and activity; that it shall appeal little to the reflective, the imaginative, or the reasoning power, and that it may leave its possessor a very dull fellow indeed.

We are not without some very significant and instructive experience on this point. In girls' schools in England we have long had one form at least of technical instruction of undoubted utility. Needlework is not only a beautiful art, but is one of undoubted domestic utility, indeed an indispensable element in a girl's education. It has long received a large, perhaps an inordinate share, of attention in England, and has been prescribed by the government as a necessary subject of instruction in all public elementary schools to which girls are admitted. This requirement has not only been approved, but it has been emphasized by the opinion and practice of the local managers to whom the administration of the details is so largely entrusted. In villages in which the influence of Lady Bountiful or the vicar's wife is dominant, nearly the half of every-day is sometimes spent by little girls not in being *taught* to sew, for that might be effectively done in one-third of the time, but in mere dawdling over needlework and in the manufacture of garments for sale or for home use. From the point of view of those who desire to make the common school effective as a preparation for the duties and resposibilities of an intelligent life, the amount of time and effort thus spent appears to be out of all proportion to the value of the results produced. In fact, experience has shown that needlework, regarded simply as a manual art, and not taught with intelligence, does little or nothing to improve the general capacity of the learner, and that proficiency in this accomplishment may easily co-exist with dulness and mental vacuity and with complete helplessness in regard to all the other duties and claims of life. Such experience as this is well calculated to moderate any extravagant anticipations and to warn us that for boys and girls alike, hand-work is not necessarily educative unless it is associated with other work, and regulated by considerations of another kind.

I conclude, then, with this general inference from recent discussions. There is room in our schemes of instruction for increased attention to manual training. The neglect of this subject, in fact, is an undoubted mistake, and it needs to be corrected. But the necessary change in our educational procedure must be made with caution. We must not exaggerate the educational value of mere hand-work and not make it a substitute for intellectual effort. We must not make a fetish of technical or manual instruction. We must not suppose that the world is to be regenerated by turning schools into workshops, or by dethroning the schoolmaster to make room for the artisan. The urgent question now demanding the attention of all serious educators in both the western and the eastern hemispheres is: What is the true and rightful place to be held by the training of the fingers and the senses, and the artistic faculty, as part of a liberal education, and how can such training be so given as to be instrumental in fulfilling the highest purpose of a school—the development of a complete and rounded character, in force, in refinement, in intelligence, in moral purpose? This is not an easy problem. It is not yet solved. It will not be solved until much larger experience and more thought and knowledge have been brought to bear upon it. But every such convention as this, in which earnest teachers meet to encourage one another in the pursuit of lofty ideals and to confer with each other respecting the best way to make teaching nobler and schools more useful, will do something to render the ultimate solution of the problem easier and more fruitful.

THE INTERPROVINCIAL CONVENTION.

(Continued).

President Forrest, of Dalhousie, expressed his great pleasure at being again present at the Teachers' Conventon, and said that—

He had attended a large number of them in Nova Scotia during the past twenty years, and felt that he had a right to be present. The college professor and the common school teacher were just engaged in different departments of the same good work. He had commenced in a primary school, then taught an academy for years, and although now engaged in college work, he had no thought of deserting the ranks of the teaching profession. He was glad to see so many representatives of the colleges present. Such a meeting as this would show that there was more friendship and less jealous rivalry among the colleges than most people suppose. When asked to speak on the topic of the evening he looked upon it as a sort of call to the colleges to justify their existence to the general public. Everywhere in America the colleges are making great demands on the public for support. Even the wealthy universities of the United States with their millions of revenue-producing funds are all the time demanding more money, while our small and poorly endowed institutions are always requiring aid from the people. The amount of money received by the colleges is very small when compared with the growth of wealth in the community. Still it is sufficient to lead those who are asked for it to inquire, What good are you doing with it? And it is not unreasonable to expect the colleges to answer. What influence has the college on industrial and social life? In answering this question historically we have simply to look back and see what the colleges have done. If we look at the influence of the universities at the close of the middle ages we will see that they were one of the most powerful factors in the great social changes that then took place. When the [illegible] of [illegible] commenced it was the universities which carried on the work. They [illegible] for the newspapers, magazines and reviews of modern times. Indeed if it had not been for the universities the good work must have failed. No man can read the history of Europe from that time without seeing that the great universities have been centres of light ever since. In America we have a much briefer period to examine, but he has read the history of this continent to poor purpose who has failed to see the great influence which the colleges have exercised, particularly upon the social condition of the people. Canada owes not a little to her professional men, and her men in various professions owe almost everything to her weak and poorly equipped colleges. But the question is not what have you done with the paltry pittance you have received in the past, but what can you do with a reasonable degree of support? And it is here that the question raised by Dr. Sawyer comes in. What is a college? Dr. Forrest did not quite agree with all that had been stated. He did not believe in moulding the curriculum of a college to meet the whims of every age and class, but the demands of the age were changing and we must, in some measure, seek to meet them. The fault of the old curriculum was that it was a sort of cast-iron mould—you forced a man into it, whether it fitted or not. If he died in the effort, well and good; if not, you dubbed him B. A. and sent him out to his life-work. Many a good man failed, simply because he had no aptitude for some one subject demanded. There is no necessity for our abandoning the study of classics, but a man is not necessarily a fool who does not succeed in Latin, or in Greek, or in mathematics. The universities of the day realize this, and there is everywhere an increasing desire to put a man to the studies for which he has an aptitude, and to widen the scope of the college and increase the number of subjects taught so as to meet as far as possible the requirements of all classes in the community. If the community would enable the colleges to enlarge the number of subjects taught, to equip proper faculties of law, medicine and engineering, it would pay (even from a mere economic point). Every one must see that a properly trained chemist, physician, lawyer or engineer, is actual wealth to any community. Indirectly if not directly they are producers as well as farmers or fishermen. It requires one hundred medical students to be in college to supply the annual demand for physicians in the Maritime Provinces. The fees of these students alone in colleges abroad will cost $15,000 a year. Half of the amount will equip a college at home which will do the work equally well. It would surely pay the Maritime Provinces to contribute the amount. And what is true of medicine is equally true of other departments. Other countries have come to the conclusion that their colleges pay and they are liberally supporting them; and it will be well for the social and economic condition of our country when a large proportion of its accumulated wealth is devoted to training its citizens for the higher posts of usefulness. We have special difficulties in our way, but we are not without encouragement. Sir William Dawson has reminded us of the progress made in our common schools. We have made similar progress in our colleges. With many discouragements we have had enough success to stimulate us to greater efforts. Let us all do our duty, whether as teachers of kindergartens or presidents of colleges, and we will yet have cause to rejoice in the educational progress of our country.

President J.R. Inch, of Mt. Allison, Sackville, said: From the circumstances of the discussion of this evening, and the profession of those selected as speakers, it must have been anticipated that a consensus of opinion would prevail in regard to the beneficial influence of the college on the industrial and social life of the country. It might have added point and zest to the discussion had representatives of the distinctively industrial and social elements, as well as representatives of the colleges of the country, been appointed as speakers on this occasion.

That there is more than one side to the question may be frankly admitted. If we adopt the division and the terms, used to-day by Dr. Schurman in discussing his ideal of a curriculum for Canadian colleges, we may set aside the whole range of humanistic studies as having only a regulative or, perhaps, only a negative influence upon industrial life. But even if the influence of such studies act only as brakes on the wheels of industry, they are still of incalculable value to mankind; for without these and other kindred checks the wheels of trade and commerce would revolve with such rapidity and friction as to burn out of society every vestige of the higher attributes of manhood. In a sense somewhat different from that intended by the poet, it may be said:

> "Ill fares the land, to hastening ills a prey,
> When wealth accumulates and men decay."

It can scarcely be denied that men of books, and men of practical affairs, have often regarded each other with feelings approaching pity or contempt. In comparison with the shrewd business man, the scholar seems so helpless in presence of many practical difficulties of life that it is not a matter of surprise to find the value of his scholarly attainments gravely questioned. Add to this the further facts that pedants and men of unbalanced minds, like Goldsmith's Schoolmaster, or Scott's Dominie Sampson, have often been taken as normal types of the scholar, while men of genius have shone in every walk of life without scholastic aid, and we cannot wonder that the sneer of the poet Burns has been echoed over and over again:

> "What's a' the learning of the schools,
> The Latin names of horns and stools!
> If honest nature made ye fools
> What sairs your grammars!
> Ye'd better ta'en up spades and shools,
> Or knappin hammers.
> Gie me ane spark o' nature's fire!
> That's a' the learning I desire."

Extremes meet; and though the college may be of comparatively little value, either to the genius or to the fool, it may be of infinite value to the mass of mankind.

On the other hand, it must be admitted that in their devotion to purely intellectual pursuits, scholars have too often belittled the importance of the material advancement of the world, and of a practical acquaintance with the business affairs of life. These mutual mistakes and misapprehensions are being rapidly dispelled in recent times, by modern methods of education which have exhibited in clearer light than ever before the true relation between the thinker and the man of action. Human energy is too limited, and human life too short, for one man to successfully undertake many things. It is necessary, therefore, that the intellectual and the industrial functions must, in their highest development, be separated. Thought — individual thought — lies at the very foundation of all material progress. Men of thought tabulate the lessons of experience, trace out the laws upon which safe action depends, make knowledge accessible to men of action at the cost of little effort, penetrate for them the arcana of nature, teach them how to subdue her, to harness her forces, to say to the subtle spirits imprisoned in the winds, and the waters, and the flames, in the bowels of the earth and in the clouds of heaven—"Go!" and they go; "Do this!" and they do it. The patient thinker who, in the seclusion of his study, conceived, designed, and made possible for others the triumphs of modern art and industry, is the most potent factor in results, the pecuniary benefit of which others are more likely to reap. From the time of Archimedes and Euclid, down to the present age of miracles in practical engineering, what have the grand sciences of mathematics done for the world's industrial and business progress? And what of modern science? Had such men as Humboldt and Faraday applied their great talents in caring for ancestral acres, or accumulating wealth, they might have died millionaires; but how much poorer would the world have been to-day? To look for examples nearer home, let me mention on the one hand as types of successful business men, Vanderbilt, and Stewart, and Gould; and on the other as representing the class who have devoted life and energy to the pursuit of science and learning, our distinguished visitor, Sir William Dawson. Which of these will be longest remembered as benefactors of the race?

Upon the other aspect of the theme—the social—I must be brief. I shall assume that the term social is not to be used in any narrow or conventional sense, but is intended to include whatever pertains to the welfare of men in the aggregate of human society. Does the influence of college training, both humanistic and naturalistic, need any elucidation as to its elevating tendency on human society? Look at the history of civilization! Who have been the leaders of men in almost every movement which has marked the purification and the enlightenment of the human race? From the misty years of antiquity to the brightness of nineteenth century civilization, who but the men of study, of patient thought, of well-trained mind, disciplined in porch, or academy, in cloistered seclusion, or amid the contentions of conflicting philosophies, have stood in the front ranks of progress! The rule holds good both for church and state. "The first in the competition of the schools," says Macaulay, "have usually been the first in the competition of life." The fathers of British science and philosophy, the essayists, the historians, the parliamentary leaders, the great preachers, have, in the vast majority of cases, been nurtured in academic discipline on the banks of the Cam or the Isis, or in some other of England's or Scotland's classic retreats. For the last two hundred years at least, every great leader of the British Parliament, and every renowned diplomatist who has maintained the honor of England at foreign courts, has first developed his intellectual thews and muscles at one or more of the universities. On this continent the proportion of college-trained men found in public and professional life is not so great as in the older land, but the proportion is constantly increasing; and as it increases may we not reasonably expect that a higher type of public morality will be developed, that the trade of the mere politician will become more and more discredited, and that loftier ideals of statecraft will be set before our aspiring youth.

There is one aspect of modern education which has a direct and most vital bearing on the question under discussion. I refer to the prominence given in these latter days to the higher education of women. I am old enough to remember when only the most superficial training for girls was sought for; when the suggestion of admitting women to our colleges and universities was regarded as a wild educational heresy, fraught with danger to the colleges, and ruin to the homes; when learned divines and physicians used both tongue and pen in denunciation of the dangerous innovation. But the hideous moral and physiological scarecrows which mistaken men stuck up to frighten timid women from college doors failed to turn away a few of the braver of the sex. They asked admission. A few college doors opened to receive them; they entered, and soon proved themselves intellectually the peers of their sterner brothers; they went forth from college halls without detriment to womanly beauty, or modesty, or grace; they have become in the social edifice, "corner-stones, polished after the similitude of a palace"—a bond of strength and unity, as well as an ornament of grace and beauty. And now, how marked the change! University doors fly open in all directions to these fair students, not as at first, "with impetuous recoil and jarring sound, grating harsh thunder," but as if "on golden hinges turning." What "sweetness and light" do these cultured women bring to the homes of our land! As queens of society, as mothers of coming generations, what hopes may we not indulge of their influence upon the race! Surely, if never before, the salutary influence of the college upon social life cannot now be questioned.

Dr. Anderson, Principal of Prince of Wales College and Normal School, said:

It would neither be prudent nor becoming at this late hour to enter upon the general question of the influence of the university upon the social and industrial life of the community, especially when it has been so fully discussed in most of its aspects by the speakers who have preceded me. They have presented a most satisfactory, because most convincing plea for the existence of the university, and have unquestionably put in the clearest light the fact that in these provinces the universities, notwithstanding their inadequate support, aim at, and to a considerable degree succeed in elevating the social condition of the people and stimulating their industrial activity.

There is one feature of the subject, however, which has not been touched upon, and to which I would invite your attention during the few minutes which remain to me. I must confess that I feel no small surprise that some of my predecessors did not refer to it, since at this convention we have assembled all classes of the profession, from the teacher of the humblest country school to the presidents of our universities. I cannot conceive that any question, before such an audience as this and in connection with such a topic as that set down for discussion, can surpass in importance the expediency or rather the necessity of drawing closer the bonds which connect the common school and the university. It may be fairly asked: Is there at present any [illegible] existing relationship between them? They are so widely separated, and there is apparently so little sympathy between the occupants of the two extremes of the educational area, that one may be pardoned for concluding that they have nothing to do with each other. And yet the work which is completed at the university has been commenced at the common school, and in many cases its excellence or inferiority is greatly influenced by the quality of the foundation which has there been laid. Undoubtedly, therefore, it is of prime importance to the success of the university that the common schools be in a high state of efficiency. Although the students who proceed to the university are for the most part drawn from the academies and high schools, yet the pupils who are educated there are passed into them from the common schools, and not a few enter upon university work without attending these intermediate institutions. And consequently, it should not only be the interest of the university to keep in touch with the secondary schools of the country, and through them with the primary schools, but they ought to transmit directly and immediately to the common schools those benign influences of which they are the centre and the source.

But it may be objected that the normal school is the proper quarter from which schools of this class may obtain their teachers and acquire their influence. Now I do not desire to interfere with the proper work of the normal school. I hold that every teacher, of whatever class, ought to attend that institution and make himself master of methods and principles, and have every opportunity to practice under the supervision of duly qualified instructors in the art of teaching. I wish normal schools, in this respect, to become what their name implies, and to be carried to as high a degree of perfection for purposes of training as it is possible in their circumstances to reach. But as it is necessary in normal schools to provide for the instruction of their students in the ordinary branches of education, the best efforts of the teaching staff are directed towards that end. No doubt their laudable endeavors have been crowned with a high measure of success, but the student teachers should not rest satisfied with this result. They ought to avail themselves of the opportunity of attending one of the universities, and by a complete or partial course equip themselves more thoroughly for the business of their profession.

University education in Scotland has more than once been referred to by speakers at this convention. There is no doubt that improvements in it are not only possible, but very desirable. But what country can show such splendid results? The altered condition of society, commerce, and the industrial arts, necessitate changes to bring the Scottish universities abreast of the requirements of the present day, and these alterations are being gradually but surely effected; but if there be other seats of learning that can claim a larger number of brilliant names as lending lustre to their annals, there are none that have so generally carried their humanizing influences to every class and section of the community.

In the north-east of Scotland, the part of the country with which I am best acquainted—the counties of Aberdeen, Banff, Moray, and Kincardine—the most of the public school teachers are university men. And this has always been the case in that part of the country. The parish teacher of the last generation was generally a university graduate, and if his methods of procedure with the younger members of his school were not beyond criticism, the enthusiasm with which he inspired his older pupils, and the accuracy and thoroughness which characterized his teaching, were admirable. Nor as a rule could anyone but a university man hope to secure one of these schools, for if one received an appointment as teacher it was generally made contingent upon his obtaining the Dick bequest, which in many cases almost doubled his parochial salary. And it is well known that the examination to which candidates had to submit was in many respects as searching and extensive as that for a university degree. This examination, conjoined with the inspection of their schools, to which the participants in the bequest had periodically to be subjected, served, before the days of government inspection, to guard the schools against the appointment of incompetent men, and the people against an indolent and perfunctory discharge of a public duty. The results were excellent. From the parish schools were mainly drawn the supply of students who annually repaired to the university of Aberdeen, and who largely participated in the bursaries that were competed for at the beginning of the session. And an ardent desire for distinction, and an unquenchable love of learning were implanted in the breasts of the younger scholars, who were early fired with the ambition to acquit themselves as their predecessors had done, and were taught that the gates that barred the way to fame and fortune could only be unlocked by the key of knowledge.

I remember well the resentful feeling with which the people at large regarded the interference of government with the parish schools, and the contempt with which they spoke of normal school teachers as distinguished from those who had come to them from the university. The former had, it may be, a better acquaintance with the art of teaching; but the latter, whatever their shortcomings, were gentlemen and scholars, men of cultivated tastes and capable of maintaining what was to the Scotchman of that region a matter of supreme value and importance, the traditional connection between the parish school and the university. And this was not a mere sentiment, but a conviction founded upon an experience which dated from the times of their grandfathers. The history of the progress of the country, the narrative of the development of her resources, of the growth of her commerce, and the amelioration of the condition of the people, started from the parish school and the influences which it brought to bear upon the natural intelligence of the youth who repaired to it for instruction. And when I hear nowadays of what is called practical education (as if all education is not more or less practical), I recall what was done in Scotland for its material, moral and intellectual welfare, before technical schools were dreamed of, before the necessity of commercial or agricultural schools had begun to be discussed, and I question whether the record of the next twenty years, with all its aids to progress, will be a fairer one than that which preceded it. The true basis of all advancement is the cultivated intelligence of the community; and Scotchmen at an early date recognized the fact that the universities are the centre from which proceed those forces which are to rouse to action and regulate the energies of the people, and determined to maintain unbroken the connection which bound their schools and universities together.

I have selected Scottish education as affording the best illustration of the practical working of the system which I would gladly see adopted by candidates for first and second class licenses as far as possible in these Provinces. That it is not unreasonable to hope for it I infer from the fact that a large proportion of the inhabitants are of Scottish descent, and still retain a strong desire to share in the best education which the country can afford, and because of the ample opportunities for obtaining a university education. Where a normal school and a university exist in the same town, I cannot understand why the student teachers should not be permitted to attend classes in the university on those subjects which it is but reasonable to suppose are taught better than they can be in the normal school. Such a grace is extended to the students at Scottish normal schools, and I have never yet heard that the governing bodies have had any reason to repent of their action. Teachers ought to be brought into personal and intellectual contact with the best minds in the profession, and these are, or ought to be found at the universities. The intellectual discipline of the class-room and the study, even if only for one or two years, will prove of incalculable benefit to the teacher, and of supreme moment to the scholars under his charge. Having a cultured mind himself, trained and accustomed to think, and enthusiastic in his work, he will be able to exert a rousing, stimulating and brightening power on his pupils. And the whole community will acknowledge his influence. Coming from the centre of culture and thought, the teacher will carry sweetness and light to the remotest corners and the humblest homes of the land.

Prof. Chas. G. D. Roberts, after referring to Kings College—for which he spoke—and its prospects, said:

There is one respect in which the situation of the Canadian university is unique. This is in regard to the peculiar responsibility under which we rest in the matter of instruction in comparative history and comparative politics. This is a real, a vital, an immediate question for our colleges to consider. It is a responsibility not to be shirked. We now, at this day, are present at the beginnings of a national existence. All about us, for the last few years, mighty forces have been at work. Have our universities been guiding these forces as it is their prerogative, their duty, to guide them? Surely, the university is the heart from which should throb the currents of the intellectual forces of the nation. Canadians are a people that will have ideas. It is for the universities to see that their ideas are right ones. Canadians are a people that will argue. It is for the universities to see that they argue not from false premises, from false principles. Shall not the university then see to it, and at once, that the young men of Canada know something of the facts and the philosophy of history, and of the foundations of economic science? See this our country, standing uncertain, but eager with the restlessness of the race, waiting for the change? But what change? Ah, this it will be for those young men whom we are training now to decide. And whose the responsibility, then, if through ignorance they decide not aright? We are a self-governing people. The universities must see to it that we know how to govern ourselves. The change may come not to-day, nor yet to-morrow, neither, perhaps, within the next ten years. But a change will come. Then, when the issue is thrust upon us, finally, if the Canadian university has been alive to its duty, may we feel confident that this dear Canada of ours will not be astonished or cast down.

A synopsis of the last day's proceedings of the Interprovincial Convention will be given in the next number, to be followed, as space may warrant, by papers read at the section meetings.

For the Review.

THE KINDERGARTEN.

The Truro Kindergarten Committee have been peculiarly happy in retaining the services of Miss Woodcock as Director. The friends of education will rejoice that special instruction in Kindergarten methods and principles will form part of the training of our pupil-teachers during the coming year. The lectures given will bear directly on the practical application of Frœbel's ideas to the work of the common school, particularly those of the primary grades.

In a private communication Miss Hallowell, of Philadelphia, writes: "We have made studies this year in assimilating the Training School and Miss Stewart with our Girls' Normal School. She (Miss Stewart) will teach now 250 girls the kindergarten philosophy and prepare them to be teachers; no small work nor unprofitable to our city."

Thus it will be seen that we are in our "new departure" only trying to do what has been found a necessity in other places by earnest, thoughtful workers. In addition, the thorough training for special kindergarteners will go on. It is hoped that many young women may seize this opportunity of preparing themselves for this new department of educational service. C.

SCHOOL AND COLLEGE.

Dalhousie University has received another accession to its bursary funds. Mrs. A. Morrison, (*née* MacKenzie), Stornoway, Scotland, has left a bequest of $5,000 to found a "MacKenzie" bursary for students attending the university; students of the name of MacKenzie, MacLean and Fraser to have the preference in the selection of beneficiaries.

Dr. Willets, late headmaster of the collegiate school at Windsor, has been appointed president of Kings college. Professor Jones has been appointed to the chair of modern languages.

The jubilee anniversary of Acadia was held with great *eclat* during the last week of August. The Halifax dailies, especially the *Herald*, which published an extensive series of creditable portraits of the founders of the college, were so well filled with the details that the filling of much space in our columns would be useless. A gold watch was presented to President Sawyer by the alumni; and the degree of LL. D. was conferred upon him by the senate. A large portion of a proposed jubilee fund of $50,000 was raised. The exercises extended over two days, were participated in by a number of the leading men of the Dominion, and were characterized by the heartiest good feeling and enthusiasm.

Rev. Daniel Chisholm, D. D., has returned to Antigonish after eight years absence in Rome, where he made his course in philosophy and theology. Dr. Chisholm's career as a student has been very brilliant. The *Casket* understands that he will be added to the teaching staff of St. Francis Xavier's college.

The Mt. Allison Institutions have begun collegiate and academic work for the year under very favorable auspices. The freshman class at the college is large and has some promising students.

The N. B. University, it is expected, will have about twenty students in its freshman class this year.

Pine Hill College, the Presbyterian College of the Atlantic Provinces, is very beautifully situated on the Northwest Arm, Halifax, only about a mile from the University of Dalhousie. Its Divinity faculty is about as strong as the Divinity and Arts faculties of some of our colleges taken together.

PERSONAL NOTES.

Mr. James Hannay, the well known author of the "History of Acadia," has completed a history of the war of 1812, viewed from a Canadian standpoint. It will be published in the Toronto *Empire*.

D. M. McIntosh, M. D., is now practising his profession in Washington, Me., after graduating with honor from the college of physicians and surgeons, Baltimore. Dr. McIntosh recently taught the superior school at Bathurst, N. B.

Ingram B. Oakes, A. M., Inspector of Schools for York and Carleton Counties, N. B., succeeds Professor Tufts as principal of the Horton Academy.

Principal McRae, of Hants County Academy, Windsor, goes to Mexico, and is succeeded by C. F. Hall, Esq., M. A., of Amherst.

Herr L. Bober, Professor of German in connection with the Berlitz schools of languages in St. John, has been appointed a director of the schools for New Brunswick.

We have just received the report of Hugh H. Hutchings, Esq., Inspector of the government schools of the Turks and Caicos Islands. The report shows that irregular attendance is an evil there as well as in Canada. This able report does not say good words for every school. More than one-half of them are squarely classified as failures. Mr. Hutchings is a graduate of the Pictou Academy, in Canada, and will soon either improve or wipe out the more defective schools.

F. H. Eaton, M. A., of the Normal School, and A. P. Shand, Esq., of Windsor, were appointed to vacancies on the Board of the Governors of Acadia College, at the late meeting of the Baptist Convention.

R. M. Langille, M. A., has been appointed to the mathematical department of the Pictou Academy, becoming vacant November 1st; and D. M. Soloan, B. A., to the classical department. Both have been Munro Bursars in Dalhousie University; and both graduated with honors in their special departments. Mr. Langille also holds a gold medal from the University of Halifax and has graduated in law after attending the University of Michigan. Mr. Soloan was elected valedictorian of the graduating class of 1888.

The address of W. S. Carter, Esq., Inspector of Schools, will in future be 114 Elliot Row, St. John.

Mr. G. U. Hay has been appointed to the principalship of the Victoria and Girls' High School, St. John. and Miss Maude E. Narraway takes the position in the Girls' High School, recently filled by Miss J. P. Robertson.

Inspector Carter is at present engaged in inspecting the schools in Charlotte County.

Miss L. E. Williams, after an absence of a year in New Mexico, has returned to St. John, and resumes her duties as teacher in the Victoria school, St. John.

The marriage of Miss J. P. Robertson, of the Girls' High School, St. John, to Mr. David Blackword, of Halifax, removes an amiable lady and excellent teacher from a position—the duties of which she performed with an assiduity and faithfulness that gained for her the esteem of the public and the affection of her pupils.

The following successfully passed the examination for the Nova Scotia County Academy headmaster's diploma: I. C. Craig, Parrsboro; W. H. Fulton, B.A., (Dal.) Halifax; D. K. Grant, B. A., (Dal.) Hopewell; J. K. Henry, B. A., (Dal.) Shubenacadie; H. M. MacKay, B. A., (Dal.) Plainfield; G. J. Miller, Hantsport; D. M. Soloan, B. A., (Dal.) Windsor; J. D. Sprague, Liverpool; F. I. Stewart, B. A., (Dal.) Charlottetown; J. S. Sutherland, B. A., (Dal.) St. James, N. B.

Wm. R. Fraser, Esq., B. A., classical master Pictou Academy, has tendered his resignation with the intention of proceeding to the Johns Hopkins university. His resignation takes effect Oct. 31st.

Principal E. MacKay, of the New Glasgow high school, is having an addition made to the high school building for a laboratory. The young people of New Glasgow will soon have the opportunity of laying a better foundation in chemistry and physics than is now given in more than one of our rather numerous colleges.

QUESTION DEPARTMENT.

Questions and Answers.

A. W.—Which system of phonography would it be most advisable to learn, "The Ben. Pitman," "Isaac Pitman," or "Graham's Standard" system? Is there any institution in the Atlantic provinces where standard phonography is taught?

B. D.—For a person without a teacher, studying with a view to reporting, whose system of shorthand would you recommend?

The Isaac Pitman system is used almost exclusively by English and Canadian shorthand writers. In the United States, the Isaac Pitman, Ben. Pitman, Graham, Munson and Scott-Brown are the leading systems. Each has merits peculiar to itself; but they differ in detail rather than in principle, and each has produced many competent writers and reporters. The Graham employs more contractions and abbreviations than the others, but, probably, what is gained in the use of these is more than balanced by the tax on the memory and the greater carefulness required in writing a condensed system. Any of the above systems may be acquired at the St. John Business College and Short-hand Institute; but preference is given the Isaac Pitman, as the one most generally used.

J. H.—Where can I obtain a copy of the last course of instruction issued by the Board of Education of New Brunswick? I understand it was published in the February number of the REVIEW.

The amendments to the course of instruction for common schools, proposed by a committee appointed by the N. B. Educational Institute in 1887, were published in the February issue of the REVIEW, for the information of teachers. Action on the proposed amendments was deferred until the next meeting of the Institute.

W. C. P.—What is the correct name of the enclosed larvæ? They were found on the Larch (*Larix Americana*). They strip the tree of its leaves and give it the appearance of having been scorched by the fire.

Your specimens arrived at Pictou within a week from your date of mailing; but there were no larvæ. They were all wrapped up in oval whitish silken cocoons, about half an inch in longer diameter.

Keeping them in a warm room, we expect to see a *saw-fly*, one of the hymenoptera, emerge from each, before next spring. The insect is very probably *Nematus Erichsonii* (Hartig), "The Larch Saw-Fly." This insect was first seen in America, near Boston, in 1880. In South Quebec in 1882. Later in Maine and New Brunswick, where very extensive damage has been done to the larch forests. James Fletcher, Dominion entomologist, has given very full notes of its depredations since its appearance, in his annual reports. Your observation is, we think, the first published notice of the occurrence of *Nematus Erichsonii* in Nova Scotia.

J. R.—At a meeting of our literary society, the enclosed paper was found in the "question drawer." Kindly give required explanation in next issue of REVIEW: "Explain why spring water will not freeze as readily as rain water; and also why will it not mix with rain water—as we sometimes see in the rivers what is termed storge ice: and further, is the so-called storge ice caused by the different kinds of water not mixing?"

1. Rainwater being naturally distilled is nearly free from salts of any kind, except such as may be floating in the atmosphere. Spring water contains salts in solution, and therefore tends to freeze at a lower temperature. Sea water freezes from 4° to 5° Fah. lower than pure water; and when a small portion is frozen, the ice is found to be nearly pure water, while the unfrozen portion is a saturated solution of the marine salts. When mixed, alcohol and water is reduced to a low temperature—the water freezes first while the alcohol is separated.

2. It takes some time for liquids to mix with each other, unless by mechanical or other means currents between each are set up. In rivers two different bands of water may move to a great distance before molecular diffusion at the stratum of union causes the two bands to be fully mixed. Molecular diffusion is comparatively a slow process.

3. We have never before seen the word "storge" used with your meaning or in reference to ice; and we would be glad to know where and to what extent the word is so used. What is "storge" ice? "Shell" ice is generally caused by the surface of water freezing, and the remaining water draining away and being replaced by air, or possibly in some cases, by gas. If tide water overflowed a sheet of ice, we would expect an upper sheet of ice to be formed, separated from the lower by a thin layer of saturated unfrozen water which might partially drain away at low tide and be replaced by air.

J. M. S., CHARLOTTETOWN. No. 1. *Aspidium spinulosum*, var. *Boottii*, Tucker. 2. *Pteris aquilina*, L. 3. *Osmunda cinnamomea*, L. (sterile frond). 4. *Aspidium thelypteris*, Swartz (sterile frond). 5. *Phegopteris dryopteris*, Fée. Additional *Aspidium spinulosum*, var. B. (two or three fronds), and *Dicksonia punctilobula*, Kunze (sterile frond).

B. E. D., HAMPTON. Your specimen is *Dicentra cucullaria*, D. C., generally called *Dutchman's Breeches*, and belongs to the Fumitory family.

R. M. S., MAITLAND. Your specimens are as follows: 1. *Osmorrhiza brevistylis*, D. C. (Hairy Sweet Cicely). 2. *Botrychium Virginianum*, Swartz (Virginian grape fern). 3. Fern frond *infertile*. 4. *Panicum crus-galli*, L. (Barn-yard Grass). 5. *Phegopteris dryopteris*, Fée. (Oak Fern). 6. *Carex pallescens*, L. 7. *Carex* ——? 8. *Carex* ——? (Sp. of seven and eight too fragmentary for specific determination, as is also 12). 9. *Scirpus eriophorum*, Michx. 10. *Hypnum splendens* (Splendid Feather Moss). 11. *Poa serotina*, Ehr. (False Red-top). 12. *Carex* ——? 13. *Xyleborus dispar*, Fabr. (Pin-borer, Shot-borer). This is a small beetle about an eighth of an inch in length which bores small round holes into the trunks and branches of apple trees in the western part of the province. The history of this specimen is given as follows: "No. 13 is from an apple tree about eight years old, and six inches diameter at trunk. It leaved out well; blossoms appeared; but soon all the leaves and blossoms began to wilt, and eventually the tree died. It was cut down this morning (August 9th); and from ten to fifteen insects or their holes were found in it near the ground. Being small, the holes could not be easily found on the bark, which left the roots. The soil was low, but dry and gravelly." Two live beetles were found in the small block of wood transmitted.

WM. M. G., MUSQUODOBOIT. No. 1. *Cornus stolonifera*, Michx. (Red-osier Dogwood). 2. *Monotropa uniflora*, L. (Indian pipe or Ghost-plant). 3. *Arctia saundersii*, Grote. This is a very pretty moth. The larva is a hairy caterpillar, nearly related to those called the "woolly bears."

BOOK REVIEWS.

BRIEF VIEWS OF UNITED STATES HISTORY, for the use of high schools and academies, by Anna M. Juliand, principal of high school, Whitehall, N. Y. (Syracuse, N. Y., C. W. Bardeen, publisher, 1888).

This little book of some seventy pages is in capital form for proper history teaching. Chronological and topical skeletons are given which the teacher should be able to clothe in the vestments of living history. The Yankee genius comes out however, so strongly even in this skeleton, that for instance, the history of the war of 1812 is simply a caricature in the interests of a meritless national glorification. The young Jonathans are gravely taught that the war of 1812 established the superiority of the United States navy, and the proof is given in a table of naval victories. The *four* frigates and *eight* sloops of the Yankee navy were superior to *one hundred* ships of the line, and *five hundred* smaller vessels of the British navy, because the Yankee vessels overpowered a few rash and smaller British vessels on their coast which were not equally matched with them in men or metal.

Spelling, Vol. I., 1887 (Library Bureau, 32 Hawley Street, Boston). The four numbers of this valuable quarterly make a very handsome volume, which retails at $1.50. Subscribers can get the numbers unbound as they come out for $1.00 per annum. Nothing is more certain that in the not very distant future a radical change will come over our antiquated and iniquitous law-protected orthography. And when it comes, people will only be surprised that so great, and so unexpected, and so mischievous a popular superstition was found to be interwoven through all the meshes of our practical nineteenth century civilization. Let the doubter read, then dispute. To-day, all the leading philologists in the English world are spelling reformers.

Arithmetical Exercises and Examination Papers, Hall and Knight (London, MacMillan & Co., and New York, 1888).

This neat hand-book of some 170 pages is just what our teachers would find most convenient for school drill. Part I. includes decimals, practice, simple proportion and simple interest; Part II. takes in compound proportion, percentages, averages and proportional parts; Part III., square root, areas and volumes are introduced; Part IV. includes discount and compound interest; Part V. profit and loss, and stocks; Part VI., cube root and duodecimals. The appendix contains two hundred graduated exercises in logarithms and mensuration, arranged in twenty papers of ten questions each; the whole being preceded by a list of numerical constants and formulæ in mensuration.

Metric Tables and Problems, by Oscar Granfer, and Primary Geography, by Emma L. Pardon, both published by Bardeen, of Syracuse, are valuable hand-books for the teacher. The first contains over twenty pages of excellent problems. The latter, about thirty pages, in which we find an admirable course of instruction for the conducting of lessons in elementary geography.

Army Examination Papers, 1882–7. London, McMillan & Co., and New York, 1888. This small volume of about one hundred pages will be found very useful by the general student as well as by the teacher. It will be specially valuable to candidates preparing for admission to the Royal Military College of Canada. The examination papers are on 1, arithmetic ; 2, Euclid; 3, algebra; 4, elements of geometrical drawing; 5, French; 6, geography; 7, English dictation,

Elementary Classics, Xenophon, Anabasis, bk. II., by A. S. Walpole, M. A. Published by MacMillan & Co., London and New York. This is a small pocket edition with notes and vocabulary. The clearness of the type and the care that has been taken to make the edition free from errors, make it a very desirable work for students.

EXCHANGES.

The *Century* for September is a number that should be in the hands of every educational reader. Among the important articles are Mr. G. R. Parkin's paper on Uppingham School, The Industrial Idea in Education, The University and the Bible, Women who go to College, and other valuable papers on educational topics....*St. Nicholas* for September is an excellent number, and as usual bright with illustrations and wholesome reading. Both magazines are published by the *Century* Company, New York....*Garden and Forest*, published by D. A. Munro, New York, maintains a high order of excellence, and no one who is interested in horticulture and the proper keeping of public and private grounds should be without it....The *Scientific American* of September 1st, has an illustrated article on the great timber ship recently towed into New York, from Joggins, N. S....The *Illustrated London News* (New York edition) for September 1st contains among other fine illustrated articles, a sketch and portrait of Miss Ramsay, now the wife of the head master of Trinity College, Cambridge, the lady who recently achieved the highest academical honors within the reach of female students in England....The greater part of the *Swiss Cross* for September is devoted to a valuable article containing the address of Prof. S. P. Langley, read before the American Association for the advancement of science on the "History of a Scientific Doctrine." In tracing the history of radiant heat he gives an interesting glimpse at the possibility of error creeping in, in the deductions of even the wisest men, and of its continuing to be maintained for generations. The "Sunfishes and their Allies" forms the subject of an illustrated article which will be read with interest by all the students of natural history....Among the many bright stories and beautiful illustrations of the September *Wide Awake*, will be found an exceedingly interesting account of the Ramona Industrial School for Apache girls, established in Santa Fé., in 1886, and receiving its name in honor of "that tender friend of the Indians, Mrs. Helen Hunt Jackson," and of her great book *Ramona*. Summer Lanes, another very attractive and instructive article, with it schoice illustrations taken from the paintings of some of the celebrated masters, gives a very good history of the growth of landscape painting.....The *Science of Photography* is a new monthly journal published by Queen & Co., Chestnut street, Philadelphia. It will be invaluable to the amateur photographer who is now becoming legion. ....The *Microscope*, a dollar monthly, published at 25 Washington Avenue, Detroit, Mich., U. S. A., is the best microscopical journal for its price which is published..... The *Enterprise* published at New Glasgow, Nova Scotia, comes out as one of the finest weeklies in Canada. Mr. Albert Dennis, of the *Colonial Standard*, with a name famous all over Canada in journalism, is understood to be the enterprising projector.....*Science*, published weekly, 47 Lafayette Place, New York, is one of our most valuable exchanges. It keeps the reader in touch with every new point of scientific interest in the world in general, and in America in particular,

Every Teacher in America Should Read the September

"CENTURY."

FOR the first time in its history "THE CENTURY MAGAZINE" devotes a single issue largely to Educational Themes, while at the same time keeping up its other distinctive features in the way of the Life of Lincoln, the Siberian papers, fiction (two short stories), miscellaneous articles, etc. The papers on

EDUCATIONAL SUBJECTS

include the following: "Uppingham: An Ancient School Worked on Modern Ideas," with a portrait of the late Edward Thring (who is said to be since Arnold of Rugby the most highly esteemed educator of England), and many beautiful illustrations by Joseph Pennell; "The University and the Bible," by T. T. Munger, in which the author takes the ground that the student should obtain as thorough a knowledge of the Christian as of the heathen classics; "Women Who go to College," a brief suggestive history of the growth of the movement toward the higher education of women, by Arthur Gilman; "Art in Education," by W. J. Stillman; an illustrated paper on "The Industrial Idea in Education," by Charles M. Carter; an article on "College Fraternities," with pictures of twenty eight different society halls and chapter houses of American Colleges, and a letter from President Seelye, of Amherst, on the subject of secret societies; editorials on "Modern Collegiate Education" and "Individuality in Teaching," etc.

No one interested in the cause of teaching can afford to miss this great educational issue. The other contents of the September Century include an exceedingly interesting paper on EXILE TO SIBERIA BY ADMINISTRATIVE PROCESS, by George Kennan, with an "Open Letter" by the same writer, "Is the Siberian Exile System to be at Once Abolished?" Sold everywhere after Sept. 1st, or mailed by the publishers on receipt of price,—35 cents.

THE CENTURY CO., NEW YORK.

ACADIA COLLEGE.

FACULTY OF INSTRUCTION.

REV. A. W. SAWYER, D. D., President,

Professor of Moral Philosophy and Evidences of Christianity.

REV. E. A. CRAWLEY, D. D., D. C. L., Professor Emeritus. D. F. HIGGINS, M. A., Ph. D., Professor of Mathematics.

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REV. E. M. KEIRSTEAD, M. A., Professor of English Literature, Logic and Psychology.

A. E. COLDWELL, M. A., Professor of the Natural Sciences, and Curator of the Museum.

L. E. WORTMAN, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.

N. S. County Academy Entrance Examination, 1888.

THURSDAY AND FRIDAY, APRIL 26 AND 27.

(Continued from the June number.)

USEFUL KNOWLEDGE. 10.45 *a. m.*–12 *m.*

(Ten questions will be considered a perfect paper.)

1. What are the following, and for what purposes are they used? Cotton, Silk, Sealing-wax, Whalebone, Tapioca, Saffron, Myrrh.

2. Tell what you know about the senses of touch and taste.

3. What is common Salt and how is it obtained?

4. What is the diamond? Name any other precious stones.

5. Name the principal carnivorous animals, underlining those belonging to Nova Scotia.

6. Describe any two of the following birds: Ostrich, Crow, Owl, Eagle, Swallow, Parrot.

7. Name the chief metals, where and how they are obtained.

8. What is meant by Gravity?

9. Explain the difference between the growth of a plant or animal and the growth of a crystal formed by evaporation of a solution of some salt.

10. What is the soil?

11. What benefit accrues to the farmer from ploughing and harrowing his fields?

12. Tell what you know about the composition of the atmosphere.

13. What is the Calyx, Stamen, Pistil, Petal and Sepal of a flower?

14. Explain the growth of a plant from the seed.

15. Name the chief food fishes found on our shores and inland waters, and the modes of catching them.

BRITISH AND CANADIAN HISTORY. 2–3.30 *p. m.*

1. Name the Tudor and Stuart Sovereigns of England, with the dates of their accession.

2. For what were the following personages celebrated? Cardinal Wolsey, Oliver Cromwell, William Pitt, Warren Hastings.

3. In whose reign did each of the following events occur? Battle of Hastings, Battle of Cregy, Gunpowder Plot, Act of Uniformity, the Great Fire of London, Battle of Plassey, Abolition of Slavery, Treaty of Berlin.

4. Write a note on the Chinese Wars during the reign of Queen Victoria.

5. Give a short account of Cartier's voyages.

6. Who were the United Empire Loyalists? Tell what you know of their settlement in the British Provinces.

7. Assign events in Nova Scotia History to the following years: 1598, 1621, 1710, 1750, 1784, 1819, 1841, 1864, 1867.

SCIENCE. The following **New Text Books** are sure to be of interest to every LIVE TEACHER. We will send postpaid for the following introduction prices:

Shaler's First Book in Geology. For lowest class in high school or highest class in grammar school,	$1 00
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Shepard's Inorganic Chemistry. Descriptive and Qualitative; experimental and inductive; leads the student to observe and think For high schools and colleges,	1 12
Shepard's Laboratory Note Book. Blanks for experiments; tables for the reactions of metallic salts and pages for miscellaneous matter. Can be used with any Chemistry,	35
Chute's Practical Physics. Intended as an aid in high and preparatory schools in the study of physics experimentally,	
Remsen's Organic Chemistry. An Introduction to the study of the Compounds of Carbon. For all students of the pure science, or of its application to the arts, medicine, etc.,	1 20
Coit's Chemical Arithmetic. With a Short System of Elementary Qualitative Analysis. For high schools and colleges,	50
Grabfield and Burn's Chemical Problems. For colleges, high and technical schools,	75
Colton's Practical Zoology. Aids the student in getting a clear idea of the animal kingdom as a whole, by the careful study of a few typical animals,	$0 80
William's Modern Petrography. An account of the Application of the Microscope to the Study of Geology,	25
Clarke's Astronomical Lantern. Intended to familiarize students with the constellations by comparing them with fac-similies on the lantern face. With seventeen slides,	4 50
Clarke's How to Find the Stars. Accompanies the above and aids the beginner in becoming acquainted with the constellations,	15
Guides for Science Teaching. For instructing classes in Natural History. Hyatt's About Pebbles (.10); Goodale's Few Common Plants (.15); Hyatt's Commercial and Other Sponges (.20); Agassiz's First Lessons in Natural History (.20); Hyatt's Corals and Echinderms (.20); Hyatt's Mollusca (.25); Hyatt's Worms and Crustacea (.25); Crosby's Common Minerals and Rocks (.40; cloth 60); and Richard's First Lessons in Minerals (.10).	

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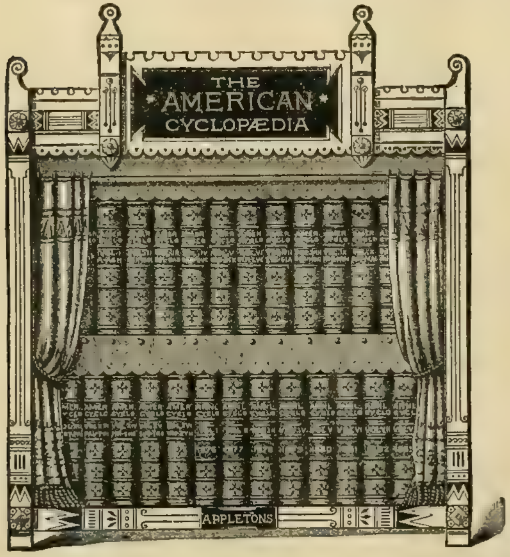

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

PUBLISHED MONTHLY. ST. JOHN, N. B., OCTOBER, 1888. VOL. II. No. 5

A. H. MacKAY, B. A., B. Sc., Editor for Nova Scotia.
ALEX. ANDERSON, LL.D., Editor for P. E. Island.
G. U. HAY, Ph. B., Editor for New Brunswick

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EDITORIAL NOTES.

THE Annual School Meetings take place in New Brunswick on Thursday, Oct. 11th.

TEACHERS will be interested in consulting our advertising pages this month.

ERE THE REVIEW will make its appearance again the teachers of Nova Scotia will have entered upon the work of a new term—perhaps we should have said a new year, having the annual report of the education office in mind. The term "school year" appears in it correctly and appropriately enough. Anyway, on the first of November the kaleidoscope will have made another turn, and from Cape Sable to Cape North, at 9 a. m., about 1,000 new forms will arise behind as many teachers' desks before some 40,000 wondering, curious Nova Scotians, in the most inquisitive stage of their growth. Then will follow the struggle for supremacy. The eye, the face lines, the tone of voice, the port will be breathlessly scanned in this mental duel. It must be decided who will be the master and for how long. Sometimes the duel lasts for only a few minutes; more commonly for days, and weeks, and months. But of this we shall talk at another time; we now wish merely to express our sympathy with 700 teachers who are making arrangements to move at the end of this month into new and untried localities, and nearly 300 who are entering upon the profession, the most promising of them with fear and trembling. To the one thousand and one hundred who continue from the one term into the other, we offer congratulations. As they are free from the mental worry of the unsettled, and the strain of the war of conquest in a new school, so are their patrons free from a useless November which is spent by the new teacher in discovering whom and what he is to teach. May the day be hastened when the one thousand one hundred shall be many more!

To the moving teacher we have to say, among the many troublesome arrangements you have to think about, do not forget to intimate your change of address to the EDUCATIONAL REVIEW. To the stationary teacher, we would suggest the giving of a hint to intelligent trustees to become suscribers, so as to keep them posted in the educational trend of thought and practice in our Atlantic provinces and in the world; and as our education is never complete, intelligent families in the school section, as well as teachers, find the REVIEW of service in stimulating a useful line of thought at home.

We wish, again, to call attention to the reason why the REVIEW differs from many other educational journals in not filling pages with exercises or problems or examination questions in arithmetic, grammar, geography, etc.; just because in these subjects we have very fair text-books. It would require no effort to multiply such exercises to redundancy; but then we would be cultivating fields already fairly cultivated, while other fertile tracts were being left altogether inaccessible. Already we have received an unexpected heartiness of support from many counties of the province, where the teachers have apparently supported us *en masse*. With the school trustees and other citizens as our readers, we trust that those who employ our teachers may hereafter come to value them more highly, and be more in sympathy with that educational reform which is already, in many parts of the world, beginning to do more for the state than any other beneficent human power.

IN a late number of a Nova Scotia paper a correspondent criticizes the teacher of a school where he found written upon the blackboard these questions:

> What are the names of the candidates for the presidential election? What great person of the United States died within the past few months? How did the United States senate treat the Fishery Treaty? He then adds: "Can there be anything more disloyal in Her Majesty's dominion than the principle of inculcating the minds of our children with such a deep interest as to the working of the United States so as to make it an everyday study? I think that there is sufficient material to be found in our own political and historical circles to occupy the time of the children while they are at school. I do not object to questions in general concerning our friends across the border, but I think I speak the minds of many of our loyal citizens when I state that care should be taken that our youths be instructed in detail concerning the British empire and not in that of the United States."

Could anything be more bigoted and narrow than this? How does the writer know that it is "an everyday study" from merely seeing the questions on the board during one visit? How do such questions show "a deep interest as to the working of the United States?" And how does he know that the pupils were not fully "instructed in detail concerning the British empire?" Next to having a competent knowledge of the history and resources of the British empire, pupils should early be taught to take an intelligent interest in other countries and what is going on in them, and that is precisely what the teacher, it seems to us, was endeavoring to do.

Such writers defeat any "loyal" object they have in view, especially when they would propose, as this writer does, such silly statements as the following:

> "The less we know of our cantankerous friends across the border, in children's classes, the better; on the contrary, I think, such questions as these would be more suitable: On what terms should Great Britain receive the States back to their former position as a colony? Show that Great Britain is the rightful mistress of North America."

In an editorial paragraph in another column of the paper, attention is directed to the correspondent's complaint, and an "immediate remedy" is demanded for this state of things! The editorial sanctum must have been invaded on this occasion, for the gentleman whose name stands at the head of the editorial page shows too liberal and cultured a spirit in the pages of his History, which is the delight of our students to read, to endorse utterances and insinuations like the above.

THE NOVA SCOTIAN KINDERGARTEN.

Quoting our remarks in the last number of the REVIEW in favor of provincial aid to the Truro kindergarten in affiliation to the normal school, the *Morning Chronicle*, the provincial government organ, says:

> "Our contemporary's wish respecting governmental encouragement of the kindergarten system has been anticipated by the local government. An arrangement was made several weeks ago, whereby in consideration of certain instruction to be given the normal school pupils by the teacher of the Truro kindergarten, and of admission of the normal school pupils at stated times to observe the methods of teaching, the government are to contribute a portion of the salary of the Truro teacher. Thus at a small cost to the province the normal school pupils will receive a measure of instruction in the kindergarten system, which should be of great value to them hereafter in their work as teachers in the primary departments of our public schools."

The advantages now offered to those who can avail themselves of it, are well put in the following letter from the president of the Frœbel Institute of Nova Scotia:

To the Editor of the Colchester Sun:

DEAR SIR—You and those readers interested in improved educational methods, will be glad to hear that Truro Kindergarten Committee, at a meeting held last Saturday at 8 p. m., passed a resolution allowing persons desirous of studying Frœbel's system, under their accomplished director, Miss Woodcock, to come in at any time, during the term, for a period of not *less* than one month. This will be a great privilege, for so many of our teachers are not able to take the full course right through, but are, nevertheless, anxious to improve their teaching by an intelligent application of Frœbel's noble system. Some of our primary teachers, with a laudable ambition, have gone to the United States at considerable expense and have learned something of kindergarten principles, but as these institutions take their vacation at the same time we have ours, the experiment is costly and inefficient. It is to be hoped that our teachers will appreciate the wise action of the committee and make the most of it. Competent judges consider that nothing, for some time, has been done which, if acted upon, will be a greater boon to those engaged in the common schools of this province, more especially in the primary grades. Those applying will be expected to take up the work of the class as they find it. This will be no barrier to success to an earnest person accustomed to studious application. Even if no *theory* were given, the privilege of *watching the kindergarten* would be worth far more than the fee to a clever teacher. One *might* study *theory* in the closet, but no adequate notion could be formed without actually seeing the work in progress. The fee for one month is $10, which brings it within the reach of all who really wish to know something about Frœbel's methods. For special kindergarteners the full course is a necessity, for which $75 is the fee. We hope yet to see this full course taken by young ladies as the fitting and finishing touch to a liberal education. Considered philosophically, it is for the profession of wise motherhood what the law school is to the lawyer, the medical school to the physician and surgeon, and the divinity hall to the theologian. The world demands special training for special functions in addition to the broad foundation required by those who lay claim to a liberal education. C.

THE SUMMER SCIENCE SCHOOL AT PICTOU.

Our space will not permit of even a feint of description. We can simply chronicle a few leading points of outline. The opening meeting was held in the Convocation hall of the Pictou academy, at 8 p.m., Monday, July 23rd, President MacKay in the chair. An address of welcome from the Town Council was read by the Town clerk, Geo. D. Ines, Esq., and presented.

The inaugural address was then delivered by Prof. F. H. Eaton, A. M., of the Normal school, in which he outlined a wide and philosophical system of public education, showing the place which should be given to work which is now being attempted in our voluntary summer schools.

The President next read a letter from Sir Wm. Dawson, expressing his regret at being unable to be present, and suggesting the publication of lists of our local fauna, the practical study of which he began in this region in his student days.

Principal James Sheraton, D.D., of Wicliffe (Theological) College, Toronto, was then introduced. In a very eloquent address he vindicated the study of natural science as a search after truth, eulogizing our knowledge, correcting our conceptions, but never contradicting what is the truth, when it is not science falsely so called.

Classes met in the various lecture rooms of the Academy, beginning at 9 o'clock each day. They were so arranged that no two lectures or demonstrations were going on at the same time, as a general rule. Pictou is probably one of the best locations in the province for a Science School, except as to mineralogical material, in which it cannot compare with the region around Minas Basin. For botanical and zoological work its terrestrial and marine *flora* and *fauna* are most extensive and accessible. For geological work, glacial action is strikingly illustrated, the coal mines and formations are present, and within excursion distances are the iron mines and fossiliferous silurian of East River, the red sandstone of P. E. I. and the great doleritic dyke near Mt. Dalhousie.

The arts and manufactures are illustrated in the Glass, Steel, Forge, Electric and Water Works of New Glasgow; Gas Works of Pictou, etc.; and from the summits of Green Hill and of Fitzpatrick Mountain can be seen panoramas of densely settled agricultural country not surpassed in the province. The Science School did not draw upon all these resources, but most of them were utilized to a necessarily very small extent.

We take the following brief diary of work from the Amherst *Gazette:*—

TUESDAY, JULY 24TH

The different departments of Zoology, Botany, Mineralogy, and Physics were opened by Messrs. McKay, Lay, Pines and Eaton, respectively. Their lectures were all introductory to the several subjects.

WEDNESDAY, JULY 25TH.

Zoology. Dissection of lobster in class.

Mineralogy. Use of blowpipe, and tests for various minerals.

Astronomy. Description and use of sextant.

Botany. Classification and use of Key.

Physics. Original experiments by students.

Physiology. The cell and digestion.

THURSDAY, JULY 26.

Mineralogy. Blowpipe analysis of various minerals.

Physics. Experiments by students.

Astronomy. Reducing observations of previous days.

In the afternoon an excursion by boat to the Steel and Glass Works of New Glasgow.

FRIDAY, JULY 27TH.

Mineralogy. Classification of minerals.

Geology. Introduction of subject.

Botany. The cell, and description of compositae.

Zoology. Dissection of clam.

In the afternoon, a walking excursion for scientific purposes to the "Boar's Back," presumably a glacial moraine, and the stone quarries. After tea the school visited the grounds of the Athletic Association, and witnessed running and walking matches, and a game of lacrosse.

SATURDAY, JULY 28TH.

Mineralogy. Blowpipe and other tests for iron ores, lead and zeolites.

Geology. Talk of geology of country visited yesterday and volcanic action.

Zoology. Dissection of oyster.

Botany. Plant life.—Various plants classified.

Physiology. Digestion.—Various interesting experiments to show action of saliva on starch.

MONDAY, JULY 30TH.

Mineralogy. Examination on previous work.

Geology. Historical geology.

Physiology. Circulation of blood.

Botany. Examinations.

Astronomy. Star Troops.

In the evening the coal mines at Westville visited. The students were taken down 3,000 feet on an incline, and 1,800 perpendicularly from the surface. The great fan and engines visited.

TUESDAY, AUGUST 1ST.

Chemistry. Questions by students; answers by Dr. Waddel.

Geology. Moraines and formation of coal.

Astronomy. The Morning Star.

Chemistry. Experiments. Theory of gases. A. H. McKay, B. Sc.

Physics. Exhibition of electroscope, electrical machines, etc. by Mr. McMillan, of Pictou academy.

Botany. Plant analysis.
Entomology. A. H. McKay, Esq.
Excursion for collecting purposes.

Wednesday, August 2nd.

Chemistry. Examination.
Surveying. Introductory lecture.
Physiology. Respiration, Dr. Primrose.
Zoology. On birds. Practical work in skinning and mounting. Classification.

In the afternoon the citizens of Pictou very generously gave the school a drive to Green Hill, while the ladies prepared a bountiful repast.

Thursday, August 3rd.

Surveying. Field work.
Physiology. Examinations.

Annual meeting of directors and election of officers. Sail on the harbor by the citizens of Pictou.

In the evening, formal closing.

Announcing of results in examination. Votes of thanks. Addresses, and "Auld Lang Syne" in Convocation hall.

The citizens of Pictou, with a generous public spirit, spared no pains to show their appreciation of the work of the school. The attendance was not far from being double that of the first year.

Present at N. S. Summer School of Science, Pictou, 1885.

Faculty of Instructors.

President A. H. MacKay, B.A., B. Sc., F. R. S. C., F. S. Sc. (London), *Zoology*; F. H. Eaton, A. M., *Physics*; A. G. MacDonald, M. A., *Surveying*; John Waddel, Ph. D. D. Sc., *Geology*; A. J. Pineo, A. B., *Mineralogy*; John Stewart, M. D. (Edin.,) *Philosophy*; A. Primrose, M. D., (Edin.,) *Physiology*; E. J. Lay, Esq., *Botany*; A. Cameron, Esq., *Astronomy*; J. B. Hall, Ph. D., Secretary; J. B. Sprague, Esq., Assistant Sec'y.

Members.

Principal J. B. Calkin, A. M. (Director); Inspector Roscoe, A. M., do.; Inspector J. Condon, Esq., do.; Inspector R. McLellan, Esq., do.; A. C. E. Mitchell, Halifax; J. M. Creighton, do.; J. M. Wiswell, do.; Lina Gunn, E. R., St. Mary's, Pictou; A. M. Cunningham, Halifax; L. C. S. Flowers, Halifax; Lottie O'Brien, Wolfville, Hants Co.; Sarah Logan, Pictou, N. S.; Mary Burns, Halifax; Maud Bowden, Halifax; Mary A. S. Holloway, Halifax; J. H. McMillan, Pictou; W. R. Fraser, B. A., Pictou; Donald Fraser, B. A. Baddeck, J. W. Logan, Stewiacke; D. B. O'Brien, Wolfville, Hants Co.; Sarah Creelman, Upper Stewiacke, Colchester Co.; J. W. H. King, Wallace, Cumberland Co.; W. J. Kennedy, Halifax; E. H. Stewart, Pictou; Wm. A. Creelman, Truro; Cassie F. McLean, Pictou; D. Brehaut, Chicago; P. Fraser, Pictou; I. Gammell, B. A., Pictou; W. Waddell, Halifax; B. F. Porter, Ohio, Yarmouth Co.; C. J. Miller, Halifax; Minnie D. Turner, Truro; S. A. Hirtle, Lunenburg; R. Hirtle, do.; W. R. Campbell, B. A., Truro; Annie F. McDonald, do.; M. Barclay, Tatamagouche; I. J. Sproull, Fisher's Grant, Pictou Co; James McCunn, River John, Pictou; Alice J. Church, Bedford, Halifax; Barbara McKay, Heath Bell, Pictou; Bessie Tupper, Truro; Louis A. McKenna, Dartmouth, N. S.; Lizzie Olding, Woodburn, Pictou; Susan Creelman, Upper Stewiacke, Colchester Co.; Minnie Harris, Pictou; Maggie Creighton, West River, Pictou; H. H. McIntosh, Lunenburg Academy; Luella Lynch, Upper Canard, Kings Co.; Martha Fitzpatrick, Shubenacadie; M. J. McPhee, South River, Antigonish; Nettie Forbes, B. A., Little Harbor, Pictou Co.; Lucy Spencer, Great Village, Colchester Co.; Etta J. Yuill, do., do.; Bertha Forbes, Little Harbor, Pictou Co.; A. D. Williams, Goldenville, Guysboro; W. Emma Barnhill, Truro; Ada Lewis, do.; Hector McKay, Spring Hill; Mary Donohue, Halifax; E. McKay, B. A., New Glasgow; J. E. Creighton, B. A., North Sydney; Dugald Stuart, B. A., Shelburne; Maggie Graham, Brookfield; H. Melish, B. A., Pictou; A. S. Dawson, Pictou.

Is The Human Color Sense Still Developing?

Discussions of late years on the possible development of the color sense in man within the historic period tend to enforce at least one point in our educational work; that is, the observation and nomenclature of color. Mr. Gladstone's observations in 1858 as to the poverty of the Homeric color-vocabulary, has been extended by other writers. It is stated that blue, as an epithet applied to the sky, does not occur in the Old Testament, the Zend-Avesta, the Rig-Veda, the Homeric poems, or in the Koran. In 1877, Mr. Gladstone held that archaic man had a positive perception only of light and darkness, and that in the Homeric age he had advanced to the imperfect discrimination of red or yellow, but no further, green of grass and foliage or the blue of the sky being never once mentioned. Mr. Axon, at the British Association meeting of last year, says that this theory depends only upon philological evidence. The weak part of such an argument is that it may confuse mere poverty of nomenclature with defective perception. In several instances this danger has been shown to be real. As far back as the stone age there is evidence of the existence of the color sense. He states that the color-vocabulary of the English gipsies is limited to green, black, red and white; but gives evidence that there is no definite relation between their color-perception and color-nomenclature.

It is curious, however, to learn that woman is not afflicted with color blindness to the same extent as the other sex. A cause is suggested in their greater attention to colors in dress decoration. Everything points to the desirability of instructing our young pupils in the accurate perception and naming of colors. If there has been any development of the color sense within historic times, attention to its education in all our primary schools must induce still more rapid progress in perfecting a very important human faculty, and if not, they will at least gain the advantage of having a language expressive of such color perceptions as they are endowed with.

Scholarship as a Preparation for Teaching.

We are anxious that it should be clearly understood that this subject is not selected for the purpose of discussing the relative merits of scholarship and pedagogic training, or in any way instituting a comparison between them. No one is more deeply impressed than we with the importance to every teacher, and especially to those who purpose making teaching the business of their lives, of informing themselves of the results of the experience of those who have been most successful in the profession, and of the investigations of those educational enthusiasts who, to an untiring zeal in the prosecution of scholastic work, have added an ingenuity and fertility of resource, a patience and perseverance, and a sobriety of judgment and power of generalization unsurpassed by many of the most noted workers in other departments of mental activity. Every province has its normal school, in which the discussion of principles and methods is intimately and wisely conjoined with their practical application to the business of the class-room; and thus the student-teacher enters upon the duties of his profession equipped in some degree for their discharge, and with open and intelligent mind, prepared to modify and adapt the instruction of the lecture-room to the peculiar circumstances in which he is placed. And the result has upon the whole been satisfactory. There has been a gratifying advance in the tone and character of the schools, and the community at large has no doubt felt the benign and humanizing influence. But there are mutterings of dissatisfaction which are becoming articulate on every hand, not confined to these Provinces, or to the Dominion of Canada, but already loud-voiced and clear-toned in the United States and Great Britain. There, as here, fault is found with the inadequacy of of the curriculum of the school to meet modern wants, but chiefly because the education too frequently provided in them is unworthy of the name. And we are not at all surprised that enlightened public men, literary men, and the "men of light and leading" in the profession itself, have poured forth the phials of their contempt upon the modern system, of which cram is the most striking feature, and have sought to overwhelm it under a down-pour of denunciation, sarcasm and invective.

The demand for thoroughly educated men as teachers does not necessarily imply a condemnation of the work which has been done in the Normal School, or an expression of opinion that scholarship is paramount, and theoretical and practical training of secondary importance. It expresses the conviction that true education can only be obtained from one who is himself truly educated. He may or he may not have had a course of training in a normal school; he may be but little acquainted with the history and development of systems of education, but his mind is disciplined, his acquirements are varied and accurate, his sympathies and tastes are literary, and his manners and habits bear the impress of culture. And, if to these he superadds an enthusiastic temperament, high character, singleness of purpose, sound judgment, and a readiness and clearness of expression, he possesses the chief attributes of a great teacher.

To provide such by any system of training is clearly beyond the power of either normal school or college. Teachers, like poets, are born, not made. And as there are many pleasing verse makers who, although they will never be numbered among the sacred few, contribute by their compositions to the happiness and instruction of mankind, so it will ever happen that the vast majority of those who choose teaching as their profession, be they useful and perhaps distinguished in their day, will never attain to the high ideal we have formed of the great teacher. The educational institutions from which proceeds the great body of our teachers can only avail themselves of the instrumentalities within their reach, and make the most of the conditions in which they are placed. The opportunities for what is properly normal school work, and the appliances at the command of the skilful instructor in pedagogics, in the best equipped of our normal schools, are perhaps as good as can be expected in present circumstances. But what shall we say of the department of scholarship, as distinguished from that of professional training? Are the instructors in English, mathematics, science, and classics, so satisfied with the results which are obtained during the short time that the students are under their care, that with confidence they can recommend them as teachers of these subjects? Have they found their students on matriculation in such a state of preparedness that they can, with the hope of success, enter upon studies appropriate to those who intend to teach? And do they observe in them, as the outcome of their class and home work, a consciousness of their powers and a perception of how to exercise them, and that influence upon character to which, above all, we look, by their instrumentality, for the elevation of the morals of the community?

We greatly fear that an unqualified reply, in the affirmative, cannot be offered to these questions. The very presence of a scholarship department in normal schools, is in itself an evidence that the student-teachers need instruction in the subjects which they will have to teach in their schools. And even if the students were much better prepared on entering than they are, and were able to satisfy the demands of the department of education, which it makes from candidates for the office of teacher, it would prove of incalculable benefit for them to be under the training of men who are competent to instruct them how to systematize their knowledge, and who, by their own lessons—model lessons they ought to be—will show them how to present a subject to a class with greatest clearness, accuracy, and force. But since it is confessed that students on entering the normal school require to be educated, as well as trained, and since for all practical purposes the latter is useless without the former, except for very elementary work, and because we believe that the better educated a man is, the more highly will he appreciate and the more thoroughly will he profit by professional training, the necessity for an efficient scholarship department is absolute and imperative.

That the results may be commensurate with the importance of the object which is aimed at, there are, manifestly, certain conditions which must be fulfilled. In the first place there should be a stringent test applied to every applicant for admission. No one should enter the classes who had not satisfied the competent authority, the Board of Education, or the principal of the normal school, that he was entitled to a license of the lowest grade. By this means the normal school would be rid of the drudgery, too often imposed upon it, of preparing students, in their school work, for this class—a duty which ought undoubtedly to be performed with credit by the better class of schools throughout the country. It would, moreover, preclude the possibility of the unseemly rivalry, in ordinary school work, which often exists between the normal and other schools, and leave more time at the disposal of the principal of the normal school for higher academical work and practical training.

Secondly, there ought to be sufficient time for the accomplishment of the studies which are undertaken. If the students who enter the normal school were well taught—if, instead of being *drilled,* they were intelligently trained to use their faculties; if their intellectual possessions, instead of bearing the impress of crudity, haste, and carelessness, were characterized by thoroughness of acquisition and clearness of comprehension, much time and labor would be saved. It is true that during the last ten years great improvement has been effected in this matter—the energy, self-devotion, and intelligence of the teachers who, during these years, have prepared the students to enter the normal school, have borne good fruit. But the multiplicity of detail in a country school, and the diversity of elementary matter, preclude all opportunity for individual training, while the hurry and impatience of such as wish to enter the normal school, their intermittent attendance and inequality of advancement, constitute a great but not insuperable obstacle to successful preparation. Unfortunately, this turbulent haste is carried with them to the normal school. They work hard, they are painstaking and regular in their attendance, but the amount of work to be done by them is so great that they have little opportunity to think—their whole interest is centered upon the forthcoming examination, and their whole anxiety to gain a license. How difficult, therefore, in such circumstances, to do what the teacher regards satisfactory work! He purposes not only to extend the bounds of the student's knowledge, but to train him to habits of accuracy and system, to lead him from results to the causes which, in their operation, produced them, and to impress upon him the preeminence of the mind over the materials with which it deals. Time, and intellectual calmness, are indispensable to the full attainment of these ends. And if these conditions are not forthcoming, what then? The alternative is grave and startling, and yet it is one which is not only viewed with unconcern by some, but unacknowledged, or openly professed, is adopted by others as their mode of procedure. *Cram* in education is the greatest and most fatal of modern shams. None of the prevailing vices in teaching has been so frequently canvassed or more heartily and deservedly condemned. It has bound up in it, or in some way associated with it, almost every fault of modern teaching. The teacher who is what is termed a good *drill,* is in most cases merely a good crammer, whose aim is, by iteration and pressure of various kinds, to force facts upon the memories of his pupils, instead of arousing their interest and winning their sympathies. But we must be careful not to make the teacher solely responsible for this state of matters. In the first place, it must undoubtedly be attributed, in part, to the impatience of the young people of the present time, who refuse to submit to what they call the slower and antiquated methods of instruction of their fathers' day, and readily welcome those which promise to lead them, by shorter and pleasanter courses, to equally satisfactory results. And, in the second place, to the crowding into the course of studies of almost every imaginable subject, which distracts the attention of the pupil, without affording him relief, and bewilders and perplexes the teacher as he skips from one lesson to another, and rapidly effaces the impressions which he had previously made. But perhaps the most potent influence at work, accelerating and encouraging this deterioration, is the system of examination which meets the pupil at every stage of his progress through school life, and bars every step he takes through college or normal school. Some test there must be, but we emphatically call in question the satisfactoriness of examinations as they are at present conducted. We hold, that as a rule the most important part of the teacher's work is not touched at all. The moral influence of the teacher upon his class cannot be gauged, and their intellectual training is but seldom put to the proof by the questions set in examination papers. Most of them are mere appeals to the memory. A good examiner is even harder to find than a good teacher. Many of those whose duty it is to set examination papers are deplorably ignorant of the first principles upon which the questions ought to be constructed, and if they have the requisite scholarship and experience as educators, they fail to make it apparent by the questions which they propose. The consequences are disastrous to all sound and true teaching. Study, under these circumstances, is for the most part not pursued for the purpose of securing the mental equipment which shall best enable its possessor to play his part in life, but with a view to obtain high marks at an examination.

How, under such conditions, can scholarship flourish? We question whether it would not be better for true scholastic ends that examinations were abolished altogether. Manifestly under the constriction of the present system true education is threatened with extinction, or at any rate with paralysis, and it becomes the duty of all who are interested in the conservation of education as the most powerful instrument in the advancement of mankind, to see to it that reform is immediate and thorough. Let such a test be applied to educational work as shall exercise an influence in the direction of culture, tend to discover and cultivate the individuality of the student, and call into exercise and train him to the use of all his powers; neither overwhelm him under a mass of work nor push him against time, but enable him to assimilate his acquisitions, lend confidence to him from a consciousness of the possession of strength and skill from unremitting discipline. Under these conditions scholarship is possible.

If the teacher would succeed he must be well acquainted with the subjects which he professes to teach. The lowest class of teacher has important functions to perform, and that he may do that with efficiency he must be able to read and spell well, must be a good arithmetician and English scholar, have a fair acquaintance with geography and history, and be tolerably expert with the chalk on the blackboard. At first sight these acquirements may seem limited, but on examination much more is involved than is evident on the surface. To be a good reader, which is a rare accomplishment, besides requiring a good and cultivated voice, clear articulation and correct emphasis, necessitates a perfect understanding of the passage, and such a mastery of the voice that by tone and inflection that meaning may be expressed. And how bald and uninteresting would a lesson in geography or history be if the acquirements of the teacher in these branches of knowledge were bounded by what he is expected to convey to his pupils! Nor need we say that, to teach the elements of English grammar and composition with success, greater familiarity with the structure of the language and the principles of composition is requisite than would at first be supposed to be necessary. The elementary teacher, therefore, must not only be competent to instruct in the first principles and early practice of the subjects above mentioned, but inspire his pupils with zeal in the pursuit of knowledge, arouse their ambition, and cherish such impulses to higher and better things as it may be his good fortune to communicate.

If we are not unreasonable in the statement which we have made of what we ought fairly to expect of the lower class of teachers, it becomes a matter of tolerable simplicity to express the requirements of those members of the profession who occupy positions of greater responsibility and from whom more striking results are expected. From the posts they fill as second or first-class teachers they complete the education of the great mass of the boys and girls of the country, prepare students to enter the normal school, and the latter at any rate ought to be qualified to provide the elementary instruction necessary for matriculation at any of the colleges in these provinces. Surely, therefore, we shall not be making an unwarrantable demand upon them, if we express ourselves respecting their equipment, in terms somewhat commensurate with the importance of the duties they undertake to perform. On them, more than any other section of the profession, depends the growth of the intelligence of the country, and therefore it is all the more incumbent upon those who are responsible for their preparation to see that only such men are certified as competent, who by their qualifications of accomplishment, character and skill as teachers, are best fitted to advance that most desirable end.

These teachers ought to be better fitted than those of a lower grade to undertake the management of classes in the branches of an ordinary English education. They ought also to be sufficiently acquainted with Latin, French, mathematics and science to lay a good and solid foundation in these subjects upon which afterwards a substantial superstructure may be safely reared. That these results may be reached, it is not sufficient that a certain amount of time has been spent or a certain allotted space traversed by the teacher, but he has a clear understanding of what he has done and has the gift of placing lucidly before the minds of others what is manifest to himself. We know that it is a common belief that some men may comprehend a process, or even discover one for themselves, and yet fail to make it evident to others. But it occurs very seldom. If a man has ability to follow or discover the various steps of the reasoning by which a conclusion is reached, he will have ingenuity sufficient to enable him to make himself comprehensible to the intelligence of others. The fact is, that in all situations in which one man has to deal with the minds of others, the first, second and third requisite is that he has a perfect grasp of the subject himself, and then in proportion to the intensity of his own conception of it will be the lucidity and force of his presentation.

But what shall we say of those unfortunate men to whom the subjects of which they know least offer the greatest attraction? The branches of an English education, in the teaching of which they might be fairly successful, do not prove sufficiently inviting to conciliate their undivided affection, but Latin or mathematics, of which they know almost nothing, irresistibly fascinates them. Dabblers in the latter, they waste their time and teach nothing. If they have plausibility enough they may deceive their pupils and impose upon their parents by the force of their pretensions. But let the scholars be subjected to independent examination, let their acquirements be put to the test and the utter worthlessness of this mode of procedure becomes painfully conspicuous. The time of the pupils has been sacrificed on the altar of vanity, habits of work have been formed which are very difficult to eradicate, and a strong and abiding distaste for certain studies acquired, which it is perhaps impossible to remedy. Such men as these ought not to be in the profession, but, if they cannot be weeded out of it, they should be subjected to such a system of supervision, that they will be compelled to teach those subjects and those subjects only, which from previous preparation and natural aptitude they are qualified to teach.

There is still great difference of opinion as to the branches of knowledge which ought to constitute the curriculum of the higher schools in the country, and, therefore, to some extent, determine the education which teachers ought to receive. There is no question respecting those which are generally known as the English branches. The battle-ground has been more or less confined to the admission or rejection of Latin and perhaps Greek, and the extent to which elementary science ought to become a subject of study. We do not purpose entering upon the discussion of this much-debated question, but content ourselves with saying that we hold that the thorough study of the classical languages is not incompatible with a successful prosecution of scientific instruction. Some students may have a strong linguistic proclivity, whereas others, by taste and talent, have greater aptitude for science, and, therefore, we consider that the curriculum should include both. And as long as the doors of the university and the profession of law and medicine are closed against those who do not possess a certain knowledge of these languages, it is clear that they must be taught in the higher schools.

And what better instrument can be put into the hands of our teachers, or what better discipline can they undergo than that of systematic study of these languages? The training in *accuracy*, even if there were no other advantage, would alone repay the teacher for the time and care which he bestowed upon them. But he will always find that the reflex influence of the Latin studies upon the work in the English class is conspicuous. The pupils grapple with the difficulties of the language with greater ease and intelligence, possess a more extensive vocabulary, and greater facility in the selection of words, and have minds stored with materials for reflection, and practised in observing the conciseness, elegance and vigor which distinguish the style of the great Latin authors.

But we are not disposed to quarrel with the means by which the end is to be accomplished. The object of every true educator is to enrich the minds of his pupils with knowledge and to evoke and train to greatest perfection the faculties with which they have been gifted. To us it does not much matter what the instrument may be, provided the result is attained. But it is clear to everyone that, as we cannot justly condemn an implement which has failed in the hands of a bungler, so an instrument of education is not to be rejected, although it does not justify the expectations of its advocates, when employed by an ignorant and unskilful teacher. Classics may be an admirable educative agency, and science may be equally so, but both become absolutely worthless when entrusted to ignorance and incompetency. And, therefore, whether classics or science be the means, the teacher's scholarship must be unquestionable, his mental discipline assured, and his skill as an educator undoubted.

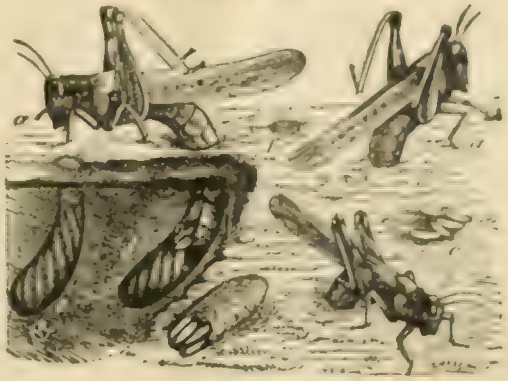
The time was, and that not so very long ago, when the occupation of the teacher was pursued in obscurity, and when, in the estimation of the general public, the insignificance which characterized him and his work fitted them only for oblivion. But all this is now much changed. No one now complains of want of publicity, or that he or it is undervalued by those members of the community whose good opinion is worth having. States are now vying with each other in their efforts to educate their people. The example of Germany has awakened the rest of Europe to exertion, and educationists proceed thither from all parts of the world to study her system and methods. Professor Hoffman, to whom the late emperor sent a patent of nobility on his birthday, once said to an eminent English minister of education, "That whatever the Germans were in arts or arms, they had accomplished all through their system of education." But a system is not enough. There must be men thoroughly qualified to work it out—men, gifted with the ability to quicken and enlarge the minds of their pupils, and without impairing the native virility of their natures, to stimulate their intellectual alertness and strengthen their moral force—men penetrated with an exalted professional spirit, whose minds are cultured, and whose hearts are sound—men of force of character, and of accurate and liberal scholarship.

THE government of India is taking a remarkable new departure in reference to education. With a view of extending its benefits throughout the country it has resolved that, wherever possible, government schools shall be substituted for private ones, and that the educational staff in these schools shall be strengthened by the engagement of specialists in Great Britain. Technical education is also very fully dealt with in the resolution, and the very sensible suggestion is made in reference to this matter that, as a beginning, an industrial survey should be made of each province. We at home incur much wasteful expenditure annually by the overlapping of our educational organizations and institutions, and an industrial survey would be of no mean utility to us as a preliminary to a well planned scheme of technical instruction.

But the most pregnant and striking proposal of the Indian government is that moral training should be provided by a moral text-book founded on natural religion. Having regard to the solvent action of western ideas on the old beliefs of India, and the great moral dangers attending a period when the intellectual portion of a nation shifts its religious moorings without finding anchorage elsewhere, this action of the Indian government is as wise as it is courageous.—*Educational Times* (England).

FERNDALE SCHOOL.

No. XVI.—THE ORTHOPTERA.



ROCKY MOUNTAIN LOCUST,
(*Caloptenus spretus*) depositing its eggs.

T. Did you ever see the insect sketched here?

CHORUS. Yes. It is our grasshopper.

T. Not altogether. You have made two mistakes. It is not exactly the same as our insect, nor is it properly called the grasshopper.

S. Some people call them locusts.

T. Very good. Our sketch is of the locust which plays such havoc in Canada and the United States, on this side of the Rocky Mountains. Its scientific name means the *Hateful Locust*.

S. It is very much like ours.

T. Well, you have specimens of our own which you have collected for this lesson. I may tell you that there is but little difference in color. The principal difference is in the wing covers.

S. The wing covers of the Hateful Locust are longer, according to the drawing.

T. Correct. Any other difference?

S. The end of the wing covers of the Hateful Locust is rounder. Our grasshopper—I mean our locust—has the end sloping, instead of rounded, just as if one-quarter of the length of the Hateful Locust's wings were cut off with the scissors, slanting, instead of square across.

CHORUS. What is the name of our locust?

T. The red-legged locust is the translation of its scientific name. Is the name correct?

S. Yes. And there is a row of fine teeth on the sides of these long, red, jumping hind legs.

T. You are right. And if you can only watch them cautiously when they are at home you can see the use to which they put them. They draw this toothed leg rapidly against the stiff veins of their wing covers, as a bow is drawn over violin strings. This is how they produce their part of the music which can now be heard in the fields. How many have noticed the insect chorus in the fields?

S. (All hands up.) There is a constant roar of sounds going on in every direction without a single stop.

T. Is that the way you talk of the autumnal concert of the orthoptera?

S. Is all the sound made by the locusts?

T. By no means. I said orthoptera. How do you know that the locust is an orthopter?

S. By its straight wing covers.

T. Well, that is one point. Examine the flying wings. Raise first the wing covers at right angles to the body, then expand the under wings.

S. The flying wings are folded up like a fan. They are nearly transparent, with a greenish tint near the body, and are netted with fine brown lines.

T. Has any scholar a different kind?

S. This locust is over an inch and a half long, is of a dark ash brown color, with dusky spots, and its flying wings, when expanded, are black, with a yellow border. When it flies in the hot sun it makes a rustling noise.

T. Very good. You have captured the *Carolina Locust.* There are several species of them. Some are remarkable for the crackling, snapping noise they make when flying by means of the edges of their wings against their wing covers. The locusts form only *one* family of the orthoptera. The *second* family is properly called the *grasshoppers.*

S. How would you know them?

T. Find one first. I may tell you, however, that they are mostly of a grass-green color, with antennæ longer than their bodies. (The antennæ of the locusts are always shorter than their bodies.) They have four joints in their feet; (the locusts only three). Their wing covers are not so roof-like in position as in the locust.

S. Oh, yes. I caught one on a bush, while it was singing, *zeep, zeep, zeep*—fiddling, I suppose.

T. Fiddling, or harping; shrilling is the proper term. The insect raises its wing covers and appears to scratch their bases against each other when producing the sound. Some of these tree or shrub grasshoppers are called *Katydids,* from the stridulation or shrilling noise made by the male.

> "I sit among the leaves here when evening zephyrs sigh,
> And those that listen to my voice, I love to mystify;
> I never tell them all I know, altho' I'm often bid,
> I laugh at curiosity, and chirrup, "Katy-did."

T. But there is a *third* family, the *crickets.*

S. We have one about our chimney, and it makes a very shrill noise.

T. That is the *domestic cricket.* It came over from the old country with our forefathers. The *shrilling* is done by the male. He raises the fore wings or covers and rubs a prominent vein in them, which is covered with very fine teeth, over the surface of the under wings. These wings and their veins are as elastic and sonorous as a little drum, hence the loudness of the sound.

S. There are lots of large crickets, and smaller ones, everywhere in the fields.

T. Very good. The large black one is called the *neglected cricket,* by the entomologists. There is also a common and rather mischievous white cricket, called the *showy cricket,* which young people might mistake for a kind of moth. It injures some useful plants by boring into the twigs to deposit its eggs in the central pith.

I will mention a *fourth* family, the *cockroaches.* These are the more important. An *ear-wig,* and a *spectre* or *walking-stick,* belonging to a *fifth* and *sixth* family, respectively, are known to be in this country.

S. How many species of each different family of the orthoptera are known to be in Canada? I suppose each kind takes up a different part in the autumn open-air field concert?

T. Over 40 different species of locusts; 11 grasshoppers; 8 crickets; 6 cockroaches; 1 spectre, and 1 ear-wig. Let us see how many different kinds we can find in our school section.

S. Are there a *larva* and *pupa* stage in the orthoptera?

T. There are; but both the *larva* and *pupa* are very much like the *imago,* only smaller, and without the fully developed wings. They do not change their forms so completely as nearly all the other classes of insects do.

I will read you some other day something about the work of the Hateful Locust.

The Hateful Locust.

Prof. Riley, the leading entomologist of the United States, thus describes the manner in which it lays its eggs. The figure at the beginning of the Ferndale lesson represents the different positions. "The female when about to lay her eggs, forces a hole in the ground by means of the two horny valves which open and shut at the tip of her abdomen, and which, from their peculiar structure, are admirably fitted for the purpose. With the valves closed she pushes the tips in the ground, and by a series of muscular efforts and the continued opening and shutting of the valves, she drills a hole until, in a few minutes (the time varying with the nature of the soil) the whole abdomen is buried, the tips reaching an inch or more below the surface by means of great distention. Now, with hind legs hoisted straight above the back she commences ovipositing, the eggs being voided in a pale, glistening and glutinous fluid which holds them together and binds them into a long, cylindrical pod, covered with particles of earth which adhere to it. When fresh the whole mass is soft and moist, but it soon acquires a firm consistency. It is often as long as the abdomen, and usually lies in a curved or slanting position. The eggs which compose this mass are laid side by side to the number of from thirty to one hundred, according to the size of the mass.

An Arabian fable represents the old world locust as saying to Mahomet: We are the army of the Great God; we produce ninety-nine eggs; if the hundred were completed we should consume the whole earth and all that is in it."

In the island of Cyprus, as well as elsewhere, the government has been endeavoring to exterminate the insect, by paying so much for each bag of locust's egg pods which are then destroyed. Sometimes the land is plowed down to bury the egg masses too deep to produce living insects. But there are vast tracts of waste lands in the world where no plows can be expected to draw a furrow.

Terrible famines have been caused by the locust, especially in ancient times, when the means of transport and communication between distant countries were undeveloped. Turn up to the prophecy of Joel, chap. II., 2–11, and read what is considered one of the most correct and sublime descriptions of one of these visitations. While life has not been lost to any extent in America through them, they have, nevertheless, destroyed millions of dollars worth of property.

We select as a description of a modern visitation of locusts, a letter from a lady in Butler County, Nebraska, July, 1874:

> "The low-hung clouds have dropped their garnered fulness down. But alas! and alack! they were not the long-looked for rain clouds, but grasshoppers. As I told you before, they passed over on the 23rd, only a few alighting; but a strong south-west wind on the 24th brought back countless millions; and on the 25th their numbers were fearful to contemplate. They would rise in the air when the sun shone hot, but as it grew cooler they came down like the wolf on the fold. They settled like huge swarms of bees on every living thing. Fields of corn which had been untouched before were now stripped of tassel and blade. A field of early corn was being eaten so fast that the girls went to save a few ears, instead of going to visit a sick school-mate according to promise. Trees were so loaded with the pests, that those four and five feet high bent down until their tops touched the ground, and in some instances broke off. For three dreadful hours they dashed against the house like hail. So many come in at door and windows that every aperture was closed; but not until they were so thick on the windows that we were forced to make a business of slaying. The 25th of July will be remembered by the citizens of this and some other counties as the dark day, when desolation and devastation stared us in the face."

THE SCHOOL ROOM.

Lessons on Color.

(For the [illegible])

The teacher must remember that in these lessons, when we speak of mixing colors, we mean the mixing of pigments, or colored matter. The mixing of spectrum colors, that is of colored lights, will in many cases produce very different results. By mixing blue and yellow paints, for instance, we make a green. But a mixture of pure blue and yellow light gives us a white. In the mixing of paints, etc., we must practically consider red, yellow, and blue, to be the primary colors. In combining colored lights we are equally forced to consider red, green, and blue, as the primaries from which all other colors may be produced. Accurately speaking, we do not always mix colors when we mix pigments. Absorption of color takes place according to very definite laws in the mixture of paints, so that the convenient nomenclature of color combination, with the ordinary artist, is sometimes far astray from the accurate statements of the physicist. The following table will illustrate:

COLORS COMBINED.	Result by Mixture of Light	Result by Mixture of certain Paints.
Red and Green,....	Orange...........	Dark Green.
Yellow and Blue,..	White......... ...	Fine Green.
Red and Blue......	Violet-Purple	Deep Red.
Purple and Green,..	White.............	Dark Green.
Yellow and Red,...	Yellow-Orange	Red Orange.
Purple-Violet and Green, ...	Pale Violet-Blue...	Black.

When we use the word colors, then, in the primary school-room, we understand it to mean, not colored light—the true color—but colored matter, which when mixed together does not give us exactly the colors of each before combination. Thus the real colors, yellow and blue combined, gives white. But yellow and blue crayon rubbed together gives a green. Therefore, it follows that when the colored matter was combined, all the colors of the spectrum which produced white were absorbed, except the green. We say, then, yellow and blue make green—meaning yellow and blue paint makes a green paint. For a short explanation of the nature of color see Gage's Elements of Physics, in our high school course. For a full and most satisfactory exposition, see Rood's Modern Chromatics.

Lessons for Primary Classes—Secondary Colors.

5. ORANGE.

(*a*) Mix red and yellow by means of colored chalk crayons on the board. Draw a square to say twelve inches. Draw red lines vertically in it, as far apart as the breadth of the lines. Then draw yellow lines between them. Finally blend the two colors by rubbing them horizontally with the tip of the finger. It is orange.

(*b*) Call up a section of the class to fill each a four inch square with orange made from a red and yellow crayon.

(*c*) Call up another section of the class when this is done to fill in a similar adjacent square with an orange crayon and compare the colors.

(*d*) Let them point out all the orange colors to be seen about the schoolroom.

(*e*) Let them mention all the orange things they can remember to have seen.

6. Green.

(*a*) Combine yellow and blue in a large square before the class as in the previous case.

(*b*) Call up a different section of the class to repeat it in four inch squares.

(*c*) Another section fills adjacent squares with green crayon, for comparison, as before.

(*d*) Point out all the greens visible about the school-room.

(*e*) Mention green things from memory.

7. Purple.

(*a*) Repeat as before, with red and blue crayons.

(*b*) Repeat as before, with a still different section of the class, until all have had their turn at the four inch purple squares.

(*c*) Repeat as before, making four inch squares of purple crayon, for comparison.

(*d*) Name purple objects in sight.

(*e*) Name purple objects from memory.

8. Review.

Draw six four inch squares in a band thus:

1	2	3	4	5	6
Red.	Orange.	Yellow.	Green.	Blue.	Purple.

on several boards around the room.

(*a*) Call up a pupil to each, with a red crayon, to draw vertical lines, separated only by their own breadth, in squares 1, 2 and 6.

(*b*) Call up another section next, with yellow crayons, to draw similar lines in 2, 3 and 4.

(*c*) Call up another section, with blue crayons, to draw similar lines in 4, 5 and 6.

(*d*) Call up another section to fill in the blank lines of the primary colors with the same colors.

(*e*) Mention the colors in each square, beginning with red, (1, 3 and 5).

(*f*) Blend the colors in each square, name them, tell which are composite and which are primary.

INTERPROVINCIAL CONVENTION.

(Continued from September number.)

On Thursday morning, July 19th, the Convention met in sections:

Section A.—Normal Schools. The principals of the normal schools of each province met, and after an informal discussion considered the papers read, and then adjourned to meet with other sections.

Section B.—Inspectors. This section met at the Grammar School room, Oddfellows' Hall. Inspector Arbuckle, of P. E. Island, was elected chairman, and Inspector I. B. Oakes, A. M., Secretary.

Inspector Condon, of Halifax, read the first paper on "The Inspector a Necessary Factor in a Public School System." The following is an abstract:

He said he would speak plainly from an experience as Inspector for seventeen years. It is sometimes asked by a certain class of persons: Is a system of school inspection necessary? In view of the large amount of public funds expended on education it is of the first moment that this large expenditure should result in the best fruit possible. This can not be realized without an intelligent and faithful staff of Inspectors. In many sections, year after year passes while the school is sorely needing school appliances. Without these the best efforts of the teacher are rendered almost fruitless, when perhaps $10 worth of apparatus would remedy the defect. The Inspector must urge the necessity and see that apparatus is supplied. He is sometimes unable to effect a supply. There is urgent need that the Inspector have a larger discretion and authority in this matter. He should be a guardian of the proper expenditure of the public funds.

Again, there are many inefficient teachers and time-servers. As a rule the Board of Trustees cannot convert such. Hence the need of a discreet Inspector, who may faithfully point out to such teachers their failure, and if they do not reform the Inspector must plainly report and recommend penalties if necessary.

Again, we have a course of instruction to which it is important that schools faithfully adhere. Unless the Inspector keep a close supervision, many schools would overlook and override important parts and features of the prescribed course of study.

Mr. Condon favored the one term plan, extending over the school year. His address was greeted with applause, and he was followed by Inspector Mersereau in a few brief but spirited words endorsing the points made.

Inspector Roscoe, of Wolfville, N. S., then addressed the section. He pointed out the differences between the duties of Inspectors in Nova Scotia and those of New Brunswick. In Nova Scotia the Inspector has to disburse the county fund and the provincial grant. He also has to meet the County Boards of Commissioners twice or three times a year. He has also to conduct the teachers' examinations in his own counties each year. Mr. Roscoe pointed out the duties of an Inspector. He must look closely after the school houses. Many poor school houses are liable to exist year after year. He must notify, and if necessary afterwards, condemn, and compel the building of a new house. He found many schools without proper maps, blackboards and other necessary appliances.

After the Inspector has given due notice, and the Trustees fail to supply, he should have the authority to purchase the needed appliances and deduct the cost from the next county fund. Again, respecting the internal work of the school-room, many teachers need stimulus and correction. The classification of the pupils, and the studies, is often very faulty. The Inspector must point out the defects, and if his advice is not heeded he should report the case and make judicious recommendations. Again, he should keep his eye on school methods and seek to point out better methods where necessary, and see that there is a relation between method and educational principles. He must carefully guard the quality of the oral instruction. He generally inspected two schools daily; sometimes he spent the whole day in one school.

Inspector Munro, of Yarmouth, said it might seem that the discussion was in the nature of a defence of the official position of the Inspectors. He said in his field he had to disburse over $12,000 each half year. Five per cent commission on this would amount to $600. The Inspector received no consideration on this work, and yet he was required to give bonds. Church funds lose about ten per cent on commissions before they reach their destination, and no sureties are required. This view ought to modify the popular judgment respecting the emoluments of the Inspector. He referred to the need the Inspector often found for correcting the position of classes in the school-room, correcting the pronunciations of words and habits of pupils, etc., etc.

Inspector Patillo, of Bridgewater, N. S., said he was chiefly drawn to this convention on account of the inspectoral section. The experiences of former speakers had been his. He had organized over seventy new districts since he became Inspector. He painted a picture of a typical backwoods district where the majority could neither read nor write. He always felt the necessity of testing for himself personally the character of the school. Sometimes he required the teacher to conduct exercises in his presence. He found great need of school apparatus. He often carried maps with him to districts and trusted the Trustees for payment. He found sometimes ratepayers who saw no need of inspection. He had invited such persons to the school, and afterwards they acknowledged that they had not hitherto understood the character and necessity of the Inspector's work. Sometimes the politician declined an invitation to attend the school during inspection, and afterwards, in the legislative hall, said he did not believe in the need of inspection. He agreed with former speakers as to the need of more discretion on the part of Inspectors in compelling supplies and reporting upon inefficient teachers, with recommendations. He thought the teacher's disposition and temper should be tested, if possible, before being licensed.

Dr. Fitch, of England, at the request of the section addressed the Inspectors. He referred to the matter of writing, to which allusion had been made. There was no need of any fixed method of teaching. Of different methods the teacher was free to choose any he may prefer.

In answer to Supervisor McKay, Dr. Fitch said the Inspector's power in stimulating idle or inefficient teachers in England depended largely on the Inspector's detailed report. In this he pointed out the defects, and classified the pupils passing the examination, and the grant to the teacher or Board was dependent upon the results of the examination as detailed in the Inspector's report. The financial result being dependent upon the scholastic result, was a very powerful stimulant and corrective. The managers and teachers of the school chose certain specific subjects for certain classes, and the Inspector examines on these subjects along with the necessary general subjects. The Inspector is required to visit only once a year, on a prescribed day. The teacher is the servant of the local Board, is engaged by the Board, retained by the Board, is responsible to the Board, and can be dismissed by the Board. The teacher is not dismissed without just cause.

An Inspector in England has a district embracing about fifty thousand pupils, and has two or three assistants. He makes one visit a year, and visits about one hundred and twenty schools a year. The Chief Inspector receives £5,000 a year. Subordinate inspectors receive £500 and upwards. His travelling expenses are paid by the government. Schools are kept in operation during the entire year.

Superintendent Montgomery, of P. E. Island, addressed the section, dealing with the mode of support of the teacher and the school in that Province. He showed how largely the Inspector was backed up by the education department, and stated his conviction that in Nova Scotia the education department should disburse the provincial grant and county fund.

Chief Superintendent Crocket expressed his conviction that, in the public interest, the heavy burdens laid upon the Inspectors should be lightened. He classified their duties in each district, and showed how wide and important they were, requiring more time for their proper discharge than is now afforded.

Inspector Carter, of St. John, read a paper on the relation of the Inspector to the teacher and the district. He urged as a remedy for the present decreasing salaries, greater permanence in the profession, to be obtained either by the one term in the year system, or an added compulsory clause in the law. He urged the importance of more exact grading, and the abolition of the marking and prize system. He spoke of the value of a time-table, closely adhered to, as well as the importance of following closely the course of instruction, and the grading of mixed schools only at the end of each term.

Inspector Smith, of Petitcodiac, next addressed the section. He referred to his pleasure in listening to the experiences of the Nova Scotia Inspectors, which he found were identical with his own, and therefore a recital of his own seemed less necessary. He referred to a typical poor school in his district, and told how a visit thereto depressed his spirits. He recited other very amusing experiences and incidents.

Inspector Mersereau referred to the fact that the same time-table is often kept term after term, rather as an article of ornament than of use. He explained his plan of having time-tables renewed. He referred to many ways by which the Inspector should help the teacher; he should seek to encourage and stimulate; he should also seek to derive much help from the examinations and personal experiences of the teacher. He could help the educational interest much by encouraging the taking of educational papers, especially the EDUCATIONAL REVIEW. He could do much by encouraging the holding of teachers' institutes. He should feel a fatherly interest in all the teachers and seek to help them in every way.

Ex-inspector McSwain read an interesting paper on "What may we do to make School Inspection more efficient?" He emphasized the value of frequent conferences of teachers upon the difficulties and methods of their work. The Inspector should be careful not to needlessly injure, by any indiscretion, the reputation of the teacher. He must guard against receiving false impressions of school or teacher from friends or foes. He must not, for the sake of gaining popularity, omit to point out and correct abuses. He must also be faithful in his reports to the education department. He ought to be a man of wide knowledge and discretion.

Inspector McDonald, of Antigonish, made a vigorous speech, setting forth many features of his work. He favored a twofold instead of a threefold support of schools—provincial and county, instead of provincial, county and district, as now. The general opinion prevailed that the Inspector should have some portion of his time for reading and study. As it now is he has no opportunity.

Chief Superintendent Crocket said while it was desirable that teachers' salaries should be raised, the government could scarcely be expected to raise the Provincial grant. There should be some organized effort to enlighten public opinion in the direction of an increase from the districts.

OPENING OF THE UNION BAPTIST SEMINARY.

Thursday, the 27th September, 1888, will be a red-letter day among the Baptists of New Brunswick, for on that day was formerly opened at St. Martins, St. John Co., the Union Baptist Seminary. The guests, some five hundred in number, began to assemble at twelve o'clock.

Dinner was served at one o'clock in the dining hall, after which the building was inspected under the guidance of the superintendent and other officials.

At three o'clock the chapel hall was crowded to overflowing. The chair was taken, in the absence of Mont. McDonald, Esq., President of the society, by Wm. Vaughan, Esq., ex-President, supported by Wm. Peters, Esq., Vice-President.

After a few introductory remarks by the Chairman, prayer was offered by the Rev. Mr. Mellick. The Chairman then called on the Rev. Wm. F. Parker, pastor of the Saint Martins Baptist Church, who delivered an address of welcome on behalf of the inhabitants of Saint Martins to the teachers and students of the seminary. The officers and teachers were then introduced to the audience. Addresses were delivered by the Rev. I. E. Bill, D. D., the Nestor of the Baptist denomination in the Maritime Provinces, who gave a statement of the educational operations of the Baptists from their first undertaking in 1825 to the present day, and commended the present institution to the sympathy and support of the whole denomination.

Rev. Mr. Hartley, of Carleton, followed in an earnest appeal to the students who were present, to take the fullest advantage of the provisions made for their advancement in the higher education. He also pressed upon the community in which the school was situated, and upon the whole membership of the two denominations, the necessity of rallying to the support of those who had carried the burden of the work up to the present time.

Rev. C. Goodspeed, a former principal of the Fredericton Seminary, spoke of the responsibility which the new order of things laid upon teachers and students.

Addresses were also delivered by Rev. Prof. Kierstead, of Acadia College, C. A. Everett, Esq., St. John, Rev. W. J. Stewart, Portland, Dr. G. A. Hetherington and Wm. Peters, Esq., of St. John. The superintendent, Rev. J. A. Gordon, stated that the outlay on the building had exceeded $35,000, of which amount $29,000 had been paid to contractors, merchants and others. A sum of $10,000 was yet required to complete the work. The current expenses of the year were placed at a further sum of $10,000. He stated that seventy students had signified their intention to enter for the present term, of whom forty had already arrived.

The addresses were interspersed with instrumental music by Miss Vaughan, and recitations. Tea was provided in the dining hall at 5.30 o'clock, after which the guests took their departure.

The staff consists of a superintendent, the Rev. J. A. Gordon; Principal, Rev. B. F. Simpson, A. M., B. D., teacher in classics, science and philosophy; Preceptress, Miss F. Thomas, teacher of English literature and elocution; second master, Geo. Downey, A. B., teacher of mathematics, history and geography; Miss Vaughan, teacher of instrumental music; J. C. Miles, Esq., F. R. C. A., teacher of drawing and painting; Miss Hutchins will take charge of classes in vocal culture.

The building is beautifully situated on a rising ground off the main street of St. Martins. It is built of brick on a stone foundation, three stories high, and a frontage of over 200 feet, and three wings extending back about 70 feet.

The fees will be about $140 per annum for each pupil. This will include tuition, board and lodging. The spacious grounds attached to the building will afford ample opportunity to the students, to attend to their physical development.

The wave length of red light is $\frac{1}{39000}$ of an inch; of yellow light $\frac{1}{41000}$; of violet light about $\frac{1}{70000}$.

If white paper reflects 100 per cent of the light falling upon it, the blackest paper reflects about 5 per cent. A perfect black would be invisible as it would reflect no light.

Some cases have been observed where the eye has apparently little perception of anything except light and shade. The world would look like a picture in black and white to such a person.

TEACHERS' INSTITUTES.

The St. John County Teachers' Institute met on Thursday and Friday, September 27th and 28th. The Superintendent of Education was present on Friday and addressed the teachers. He urged them to study the history of education, in order to get a wider and juster view of their profession, and to see what those methods and practices are which have survived through centuries. Papers were read on drawing, music, and methods of teaching English. These gave rise to spirited discussions, in which the lady members of the Institute took an active part. Their remarks, especially, were of a practical character.

At the Westmorland County Teachers' Institute, on the 27th and 28th September, there was an excellent display of manual work from several of the schools throughout the county. Chief Superintendent Crocket was present on the first day and addressed the Institute. The work from Mr. Brittain's school, Petitcodiac, won deserved praise.

At the Charlotte County Teachers' Institute, on the 27th and 28th September, several interesting papers were read. Among the subjects discussed was Dr. Fitch's "Lectures on Teaching."

The Carleton County, N. B., Teachers' Institute will be held in Woodstock on Thursday and Friday, October 11th and 12th. There will be an exhibition of manual work from the schools of the county. The Superintendent of Education will be present and address a public meeting on the evening of October 11th. Other speakers are expected to address the meeting.

The Gloucester County, N. B., Teachers' Institute will assemble in the Grammar-school building, Bathurst, on Thursday, October 4th. Specimens of manual work from schools will be exhibited, and an interesting programme will be carried out, including a discussion on Payne's Science and Art of Education.

The twelfth annual meeting of the Albert County, N. B., Teachers' Institute will be held at Harvey, October 18th and 19th. There will be an exhibition of school work, and a public educational meeting on Thursday evening, October 18th, at 19 o'clock. The programme embraces a series of interesting and important subjects for discussion.

Northumberland County, N. B, Teachers' Institute meets on Thursday and Friday, October 18th and 19th. The Chief Supt. will be present and deliver an address.

The annual convention of the teachers of Inverness and Victoria counties, was held at Baddeck on September 20th and 21st. This association was organized ten years ago, and through the untiring zeal of Inspector Gunn, its president, it has been the means of creating a great deal of enthusiasm and interest among the teaching fraternity.

This year there were six papers read on educational topics, all of which were both interesting and highly instructive. Especially would we mention the paper read by Mr. D. Fraser, B. A., of Pictou town, who is now principal of the Baddeck Academy. Mr. Fraser's paper was entitled "What Things are Really Worth Learning;" also a paper by Miss Mary J. McLean, of Strathborne, on "The Duties of Teachers." Surely, after such an excellent beginning, we will be looking out for more contributions from the lady teachers in the future.

During the last session the president directed the attention of all the teachers present to the EDUCATIONAL REVIEW, and in glowing terms spoke of the merits of that publication. He wished every teacher in the district to take it, and spoke of the possibility of getting every board of school trustees to subscribe for it also. Then it was moved by Mr. F. C. Coops, B. A., and seconded by D. C. McKay, that the convention express their approval of the EDUCATIONAL REVIEW. The motion was unanimously carried. The convention, which proved to be the most interesting one since the organization of the association, was then adjourned, to meet again in Whycocomagh, on the third Thursday and Friday of September, 1889.

D. C. MCKAY,
Sect'y-Treasurer.

SCHOOL AND COLLEGE.

MUNRO EXHIBITIONERS AND BURSARS.—At the matriculation examination of Dalhousie University last month, the following were the successful competitors for these fine prizes. The senior exhibitions and bursaries are competed for on entering the third year of the university course; the junior on entering the first year. Exhibitions are worth $300; bursaries $200.

Senior Exhibitions.—Geo. W. Schurman, P. E. I.; T. J. McLeod, P. E. I.; D. F. Campbell, Pictou Co., N. S.

Senior Bursaries.—Geo. O. Cogswell, Kings Co., N. S.; Robert Grierson, Halifax; D. C. MacIntosh, Pictou Co., N. S.; G. R. Rowlings, Halifax Co., N. S.; E. Fulton, Stewiacke, N. S.; J. A. McKinnon, Cape Breton; E. B. Smith; D. O. McKay, Pictou County.

Junior Exhibitions.—A. F. MacDonald (Pictou Academy), Hopewell; K. G. Webster (Yarmouth Academy), N. S.; F. F. West (Prince of Wales College), P. E. I.; Rod. McNeill (Prince of Wales College), P. E. I.; F. W. Bakin (Digby Academy), N. S.

Junior Bursaries.—A. R. Hill (Pictou Academy), Five Islands, N. S.; J. B. Johnson (Pictou Academy), Granton, N.S.; Sarah E Archibald (Pictou Academy), Sherbrooke, N.S.; Geo. F. Johnson (Pictou Academy), Stewiacke, N.S.; Jas. A. Sutherland (Pictou Academy), River John; D. T. McKay (Prince of Wales), P.E.I.; D. S. MacIntosh (Pictou Academy), Cape Breton; A. Fullerton (Annapolis Academy), N. S.; A. J. MacDonald (Pictou Academy), Cape Breton; R. S. Campbell (Pictou Academy), Tatamagouche.

ACADIA COLLEGE.—A very interesting pamphlet of some sixty pages, entitled, "General Catalogue and Historical Records of Acadia College, 1833-1888," has been published in connection with the jubilee celebration of this college. First, there is a history of the rise and progress of the college. Then lists of all its officers, and even of the class men of each year. From this latter it will be seen how important a part Acadia has had in preparing the leading men of our country for the discharge of the duties of an influential citizenship. The calendar gives the number of students attending during the last year, as follows: Seniors, 14; juniors, 18; sophomores, 23; freshmen, 46; general, 13. Total, 114.

The annual meeting of the Halifax Ladies' College was held last month. The expenditure on capital account has been $40,000. The number of pupils in all classes during the first year was 216. Receipts for tuition, $4,884.35; for conservatory of music, $4,084,-40; for board, $4,721.47. The college has opened with nearly double the attendance at the beginning of the first year, and additional room for the conservatory has had to be provided. The following directors for the ensuing year were elected: Wm. Crocket, Superintendent Education, N. B.; Rev. Dr. Macrae, St. John, N. B.; Rev. Geo. McMillan, P. E. Island; Hon. D. C. Fraser, New Glasgow; Rev. Wm. Dawson, Cornwallis, N. S.; Rev. Robert Laing, Halifax; Adam Burns, Halifax; Rev. P. M. Morrison, Halifax; David McKeen, M. P., Cape Breton; Hon. Wm. Ross, Halifax; Supervisor McKay, Halifax; Rev. Robert Murray, Halifax; Hon. C. H. Tupper, Minister of Marine and Fisheries; W. B. Ross, Advocate, Halifax; Peter Ross, Halifax; Hon. S. H. Holmes, Halifax; Donald Montgomery, Superintendent Education, P. E. I.; Rev. Dr. Burns, John Doull, Prof. Leichti, H. G. Bauld, Halifax.

PERSONAL NOTES.

Inspector Mersereau is visiting the schools in Gloucester County, N. B., this month.

Mr. N. W. Brown, late principal of the Milltown, N. B., high school, is at present on the collegiate school staff, Fredericton.

Mr. S. D. Alexander, recently of the superior school, Jacksonville, N. B., has been appointed to the principalship of the Milltown schools.

Mr. G. R. Devitt, of the Portland high school, has been appointed English master of the St. John grammar school.

Mr. H. V. Bridges, A. M., of the collegiate school, Fredericton, has been appointed to the inspectorship of York and Carleton Counties, N. B. There were eleven applicants for the position.

Miss Orr, of the Victoria school, St. John, is taking a partial course in kindergarten methods, under Miss Woodcock, of Truro, N. S.

Mr. D. W. Sutherland was one of only four successful candidates who passed the 1st B. examination in British Columbia. The examination lasted nine full days. The reason why so few passed was that eight new subjects were added this summer, in order to grant life certificates. Mr. Sutherland is a graduate of Pictou academy, and a teacher of first-class abilities, and many of the teachers now teaching in the public schools of Nova Scotia went up to examination from his school, and they look back with pleasure on the days spent under his training.—*Col. Sun.*

The temporary vacancy in the Halifax academy has been filled by the appointment of Henry M. McKay, B. A., of Plainfield, Pictou. At a very early age Mr. McKay was a distinguished pupil in the Pictou academy. In 1884 he entered Dalhousie college, winning a Munro exhibition, which he renewed in 1886. He obtained first-class distinction in classics, mathematics and science in each year of his course 8, besides taking the North British Society's bursary in 1886, and being awarded honors of the second rank in 1888, when he graduated. In competition for the Gilchrist scholarship in 1887, he was placed in the honors division of the matriculants of the London University.—*Halifax Chronicle.*

D. K. Grant, B. A., has succeeded Mr. Mahon, as principal of the high school of Antigonish.

A. J. Denton, A. B., mathematical master in the Halifax County Academy, has been awarded a scholarship for a special science course at Harvard. His students presented him with an address and valuable souvenir on his departure. He has leave of absence for a year.

QUESTION DEPARTMENT.

Questions and Answers.

B. M., Annapolis Co. Apple, pear and plum trees in this locality have been bored and ruined by the insect sent you by to-day's mail, etc.

The insect is *Xyleborus dispar*, Fabr, the "pin borer," so called from the size of its burrow. I found one of these holes in the portion of a branch sent, plugged with a wooden peg. About the eighth part of an inch distant was a new outlet bored. No use in pegging up the holes. The beetle, which is not wider than the head of a small pin, deposits its eggs at the base of the buds and the twigs in July or August. When hatched, the larva eats its way down the eye of the bud to the pith, and elsewhere. It changes into the pupa then and comes out about the first of July as the perfect beetle. The beetle itself burrows as well as the larva. The only remedy known by experiment to be certain is the amputation and destruction by fire of affected portions. Possibly a little Paris green introduced into their burrows might be serviceable. It is much more likely to be successful than plugging the holes.

BOOK REVIEWS.

Stories from Aulus Gellius, edited by the Rev. G. H. Hall, M. A.: MacMillan & Co. In the Review for March we expressed our opinion respecting the value and use of annotated editions of the classics. Although "Elementary Classics" was placed at the head of that article as suggesting it, the strictures therein contained were not directed against any special edition, but against the academic use of such books in general. Many of these texts and notes, etc., are of great merit, and will no doubt prove useful to students who are working by themselves and do not possess the necessary grammatical aids. The selections from Aulus Gellius are interesting and simple, and cannot but be looked upon as one of the best of the series of elementary classics. The grammatical notes are clearly expressed, and the exercises for re-translation well prepared. The other materials, historical and antiquarian, will, we doubt not, be found useful and suggestive. As an elementary reader, if judiciously used, it may be helpful and inspiring.

Selected Poems, from Premieres et Nouvelles Meditations, edited with biographical sketch and notes, by George O. Curme, M. A., Professor of German and French, Cornell College, Mt. Vernon, Iowa: D. C. Heath

& Co., Boston. It was upon the publication of these Meditations that Lamartine first became celebrated. They contain many of the choicest of his charming poems. Among the Premieres Meditations the student will find the masterpieces, Le Lac L'Isolement, and Souvenir, while equally beautiful, in the Nouvelles Meditations, are, Le chant d'Amour, Ischia, and Les Preludes. The biographical sketch and notes, in which Mr. Curme received valuable assistance from Madame Valentine deLamartine, the poet's niece, will add greatly to the value of the volume.

Henry the Second, by Mrs. J. R. Green; Oliver Cromwell, by Frederic Harrison: London, MacMillan & Co., and New York. Two other volumes of the Twelve English Statesmen, have been received. The events of these two remarbable periods are detailed in quite as graphic and interesting a manner as the others which preceded them. In the opening chapter of Henry II. Mrs. Green shows how, under a foreign king who never spoke the English language, who lived and moved for the most part in a foreign camp, the races of conquerors and conquered in England first learned to feel that they were one. By his power the foundation was laid of the united kingdom of Great Britain and Ireland. It was through his "Constitutions" and "Assizes" that it came to pass that over all the world the English-speaking races are governed by English and not by Roman law.

The student will find in Mr Harrison's Oliver Cromwell a most impartial history of that most wonderful man. The author does not make him a perfect hero, or spotless saint, but unlovely failings, which in truthfulness he notes, disappear in a larger view of the essential grandeur, sincerity and devotedness of the man.

Nature Readers, Seaside and Wayside, No. 1 and 2, by Julia McNair Wright: D. C. Heath & Co., Publishers, Boston. These small volumes, of some 80 and 180 pages respectively, are designed as readers for young children. Instead of spelling out some stupid story about the dog or cat, there is here conveyed intensely interesting and accurate information about the forms of life which are likely to be met by the seaside and wayside. It will make the first attempt at reading really interesting to the children, and cannot fail at the same time to develop an attention to the wonders of nature around them, and make them accurate observers. When we read over these books, as we have just done with much profit, too, at our advanced age, our only regret was that we were not started in our educational career on such a course. Teachers, if you want subjects for nature lessons, get No. 2 for yourselves. Its forty simple but accurate and illustrated lessons on the ants, the earthworm, the house fly, the beetle, the barnacle, the flowers of the sea, the sea stars, the dragon fly and his cousins, etc., will be a revelation in the delightfulness of natural history teaching. It is none of your Paul Bert crams. Get No. 1, with its simple nature teaching, where the little ones are introduced to Mr. and Mrs. Crab, visit his house, learn how he gets a new coat, what he does, his friends, other crabs, the crab's enemies and his uses, all in ten lessons. Then a half a dozen more on Mr. and Mrs. Wasp. Then the bee and the spider, and the shell-fish Mr. Conch, the sea babies, Mr. Drill, and the story of a shell-fish war. It would be a grand thing if every child in the land could begin his reading course with such books. It would do morally for our children much that the Sunday-school and the church cannot do. It would draw them in their leisure moments to the investigation and enjoyment of the infinite store of marvels in the handiwork of God around them. It would annihilate the idle hour, in which, according to the poet,

> "Satan finds some mischief still
> For idle hands to do."

Shakspere's Richard III., with an introduction and notes, by C. H. Tawney, M. A., principal and professor of English literature, Presidency College, Calcutta. This last volume of "English Classics for Indian Students" is valuable, especially for its notes, which take up more than one-half of the book, of 255 pages. They are so simple that the youngest student of Shakespere cannot fail to comprehend them, and at the same time they contain much knowledge which will be serviceable to all admirers of this great poet. In his introduction, which, while short, is exceedingly interesting, the author adopts the views of Kreyssig, the celebrated German critic.

BOOKS RECEIVED.

A Text-Book of Euclid's Elements. London: MacMillan & Co., and New York.

Shakespere's Henry V., by K. Deighton, M. A. London: MacMillan & Co., and New York.

Composition and Rhetoric by Practice, by William Williams, B.C. Boston: D. C. Heath & Co.

Students in General History, and a teacher's manual to accompany the same, by Mary D. Sheldon. Boston: D. C. Heath & Co.

Manual Training No. I., for teachers in the primary grades of common schools. Boston: D. C. Heath & Co.

EXCHANGES.

Young naturalists who have access to the sea-side, will enjoy the illustrated article in the October *St. Nicholas*—"A Floating Home"—in which are described the number of strange and curious creatures which were found living on a piece of sea-weed....Daniel Webster, in his New England Home, is the subject of a fine historical sketch in the October *Wide Awake*. Many things relating to the home life of this great statesman, before unpublished, are told, making it a very valuable paper...In the October *Popular Science Monthly* Prof. Brooks concludes his valuable articles on Jelly-Fishes. Grant Allen always writes something worth reading when he treats of plants and animals, and his article on the Wonderful Process of Reproduction, illustrated by the origin and growth of the common pea, is no exception to the rule. Another valuable article by a member of the French Academy of Science, M. Emile Blanchard, on "Spiders and their Ways," is written in such a charming style, and accompanied by such beautiful illustrations, that every student will read it with pleasure.

IMPORTANT TO TEACHERS.

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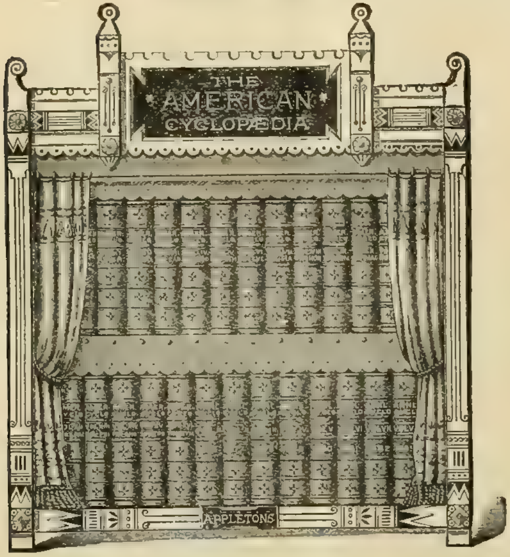

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The Educational Review.

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EDITORIAL NOTES.

THIS issue of the REVIEW completes the first half of Volume II. The subscription list continues to grow steadily, and the second year promises to give a strength and permanence to the REVIEW exceeding the anticipations of its warmest friends.

WE HOPE those friends of the REVIEW who have aided so materially in assisting its circulation, will continue their good offices, and make the list of this year double that of last.

WILL our subscribers remember that our terms are One Dollar a year *in advance.* The bills for publishing the REVIEW have to be met each month promptly, and this can only be done by prompt remittances. This does not refer to subscriptions payable to Inspectors.

SEVERAL correspondents from whom we have received favors will be attended to in our next.

THE importance of the proceedings of the High School Section of the Interprovincial Convention justify us in publishing the full report that appears elsewhere. We shall publish the report of the Advanced School Section next month.

THE Nova Scotia normal school opened at Truro on Wednesday of this week.

ATTENTION is directed to the advertisement of *Treasure Trove* in another column. This is a most interesting magazine for scholars, and the prizes offered should stimulate them to work.

IN THIS number we devote a page to the discussion of matters relating particularly to school districts and school law. On this page may also be published official notices from superintendents and inspectors to school trustees and teachers. As the REVIEW is now beginning to circulate among trustees as well as teachers, this page will prove of advantage to all interested in education.

GINN & COMPANY, of Boston, will shortly publish a "Reader in Botany" for use in schools. This book is a collection of interesting botanical articles to be read by pupils in connection with their practical work. It follows the plan of the editor's "Outlines of Lessons in Botany," and "Gray's Lessons." It treats of such subjects as "Seed-food," "Movements of Seedlings," "Trees in Winter," "Climbing Plants," "Insectivorous Plants," "Protection of Leaves from the Attacks of Animals," etc.

THE number of students in the Faculty of Arts at McGill college, Montreal, at present is 300, of whom 98 are women. This total does not include students of other faculties. A comparison of the attendance of women at the five leading colleges of the Dominion last year shows that McGill had more than all the others taken together. A comparison of the number of students taking the Arts course at McGill at decennial intervals is instructive: In 1859 the number was 60; in 1869, 78; in 1879, 149; in 1888, 300.

THE options in the Nova Scotia Natural Science paper for admission to the academies are not only very useful and fair, but are also extremely interesting. They tell tales out of school, and give us glimpses of "book and fable science as she is taught." From some schools come pupils who tell us about the English robin instead of the *Nova Scotian,* which is the only robin they ever saw. They are two different species altogether. It is the book robin *they* know (?).

They tell us of the cunning of the fox, or the tragic deeds of the eagle; the romance of the moose, or a story of the bears; but never anything they saw with their eyes. Having eyes they see not. They have never been taught.

THE EDUCATIONAL REVIEW for October, which is published monthly at St. John, N. B., has been received at this office, and is a most creditable and entertaining publication, more especially for those engaged in the teaching profession. It is well filled with pertinent and useful articles that will well repay the reader for the time taken in their perusal.—*Truro Sun, Oct. 24, 1888.*

MR. JOHN BRITTAIN, Principal of the Petitcodiac schools, N. B., during his trip down the Restigouche the past summer, discovered sixteen species of plants new to the province, besides collecting a great deal of information on other features of the natural history of that interesting river. Mr. Brittain was the pioneer botanist on the Restigouche. The result of his investigations will be given in a paper to be read before the Natural History Society of New Brunswick this winter. From Mr. Brittain's accurate habits of observation, as well as the important service he has already rendered in extending natural science work in New Brunswick, an interesting report from this *terra incognita* may be looked for.

The University of New Brunswick began its year's work Oct. 1st, with seventeen matriculants to its freshman class. Mr. Fred. P. Yorston, of Douglastown, led the class, closely followed by Bernard Baxter, of Perth Centre, Victoria county. Mr. N. W. Brown, of the collegiate school staff, matriculated into the sophomore class, under provisions for first class licensed teachers.

THE BERLITZ SCHOOLS.—The Berlitz schools of languages, which have become deservedly popular where they have been established in New Brunswick, aim to teach a language by natural methods. These methods are founded upon intelligence and common sense. No one can listen to Prof. Bober giving a lesson in German, or to Prof. Ingres or his assistants leading students into the niceties of the French language, without being charmed by the naturalness of a method which aims to make one acquainted with a foreign language in the same way in which his mother tongue was acquired. Many teachers in St. John and Fredericton have joined these classes, and so far as can be learned, their progress has been as satisfactory to themselves as it has been gratifying to the skilful teachers of the Berlitz school.

Prof. Dr. Paulsen, of the University of Berlin, Germany, in a letter in regard to the Berlitz schools of language, says:

"The method of Mr. Berlitz appears to me, as far as I have had the opportunity of familiarizing myself with it by some lessons and the expedients applied, a process specially suited to lead the pupil rapidly, safely, and with comparatively little trouble to himself,—'*tuto, cito, jucunde,*' in the words of old Comenius,—to the practical mastery of the modern languages. Its peculiarity consists essentially in introducing the foreign tongue as a living tongue, drilling it from the very beginning by ear and speech instead of teaching it by reading and writing, like the deaf-mute language. During the instruction the pupil hears and speaks only the language he is to learn. The effect of this is, first, that he is enabled to follow, without difficulty, even rapid conversation in the foreign tongue; and, second, that he thoroughly acquires the pronunciation as well as the various expressions used in forming an assertion, question or command. Whether the method can be employed in the instruction of large public-school classes, I am not yet able to state. It appears to me, however, beyond doubt, that the method is specially adapted to advance rapidly adults who desire to study a modern language for practical application. But I am also inclined to believe, that its use, at least supplementary to the ordinary public-school course, is practicable even in large classes, provided the teacher himself can converse in the language to be taught. It would be apt, above all, to re-awaken the pupils' interest, so easily blunted by grammatical exercises and translations. Really the method is only the systematized form of learning a foreign language in a foreign country by its actual use."

THE late report of the Superintendent of Insurance shows a growing tendency on the part of Canadians in favor of their own institutions. In 1875 Canadian Companies did only one-third of the life underwriting in Canada, while last year they did more than 60 per cent of it. In 1887 the Canadian offices wrote $23,505,549 of business, a gain of $4,215,853 on their record of the previous year, while the American companies decreased their business in Canada by $391,654, and the British companies theirs by nearly one million. Since 1875 our home companies have increased their business in force, 500 per cent. While the increase of Canadian business with British offices has been only 50 per cent., and with American companies only 42 per cent.

The rate of interest and the rate of mortality being so much more favorable in Canada than in the United States or Great Britain, there is no reason why our own life offices—equally safe—should not do a still larger percentage of the business, and retain for investment in our own land the $3,176,286 which we now pay foreign institutions for life and endowment policies that we can secure with equal safety and greater profit at home.

WE have to record with deep regret the death of Principal D. Henry Burbidge, M. A., of the Morris street school, Halifax. He was one of the most valuable members of the teaching profession, both in the school-room and teachers' associations. Our readers will miss in him one of the most acceptable writers for the REVIEW. He was a native of Cornwallis, Kings Co., Nova Scotia, was a graduate of Mt. Allison College and held a Grade A certificate for Nova Scotia. He taught in several sections of the Atlantic Provinces—at Marysville, N. B.; Carbonear, Newfoundland; and in Hants and Queens Counties, N. S. For ten years he had been principal of the Morris street school, Halifax. Failing health obliged him to be absent from the Interprovincial Convention, for which, however, he contributed a paper.

The funeral of the deceased took place at Halifax, on the 11th of October, and was attended by a large number of prominent citizens and educationists. Dr. Allison, Superintendent of Education, paid a noble tribute to the integrity and self-sacrificing labors of the deceased, to whom he referred in substance as follows:

"A special sense of bereavement has fallen not only on all connected with the educational service in the city, but on many throughout the province, to whom our departed friend was known, and by whom he was highly esteemed in all the relations of life, personal and professional. * * * It is our satisfaction in this solemn hour that the term of life allotted the departed was not spent in idleness, but in honorable and well-directed industry, in the faithful improvement of opportunity, in self-sacrificing work for the good of others.

Few, if any present, have known the deceased as long as myself, few have watched his career with greater interest or greater satisfaction at the fidelity and success with which his various public engagements have been met. The impression produced on my own mind by that career, and I am sure, also, on the minds of all, particularly those of the successive generations of his pupils, was that of a faithful man, a man anxious to redeem to the very letter all his obligations of duty and service. One lesson—which many alas, do not need to learn—our friend never succeeded in learning, the art of taking things easy. Into the discharge of every duty he carried an exacting and scrupulous conscientiousness which added perhaps unnecessarily to the severity of life's burdens, and also, quite probably, shortened life itself. Our only regret is that the effects of this pardonable failing fell upon himself. As to his domestic virtues, his rectitude of principle, his simplicity of Christian character, there is no need that I should eulogize him on their account. He, himself, would not wish me do so, if he had the disposal of the matter. But my relation to him will justify a word as to his professional zeal and reputation. Having selected one of the most laborious and responsible of human vocations, he determined to fit himself for achieving success in his chosen calling. For ten years he has gone in and out amongst us in a post requiring for its adequate occupancy, sound judgment, didactic skill, and unblemished purity of character. No teacher in Nova Scotia was more solicitous for the legitimate exaltation of his profession, none in greater sympathy with all that is progressive in the methods and spirit of modern education. Our friend aimed high, worked hard and accomplished much. It is only when we are thus surrounded by the memories of a well spent life—a life projecting itself forward and perpetuating its influences and its forces in the lives of others, that we realize the true import of those sublime words of Holy Scripture: 'Write, Blessed are the dead which die in the Lord from henceforth! Yea, saith the Spirit, they that may rest from their labors, and their works do follow them.'"

THE following books, printed in embossed point characters, have been recently added to the Free Circulating Library in connection with the Halifax School for the Blind:

Whittier's Poems (Selected); The Talisman; Ivanhoe; Macbeth; Hamlet; Merchant of Venice; Coleridge's Ancient Mariner, and Hymn Before Service; Our Father's Care, (Mrs. Sewell); Pilgrim's Progress; One Hundred Selected Texts; The Roman Emperors and Christianity; Migration of Races, Ostrogoths, Visigoths, and Lombards; Gay's Elegy and the Bard; Macaulay's Poems (Selected); Byron's Poems (Selected); Tennyson's Poems (Selected); Longfellow's Short Poems; There's Help at Hand, (Mrs. Sewell); Faithful Promiser; New Testament, 9 Vols.

These books are circulated among the graduates of the Institution in Nova Scotia, New Brunswick, P. E. Island, and Newfoundland; they are also distributed to those persons who have lost their sight after having reached years of maturity, and who have learned to read at home. Many an hour that would otherwise be tedious has been pleasantly and profitably spent in the reading of these books, in some instances by persons upwards of sixty years of age.

The friends of the blind throughout the Maritime Provinces should keep this library in mind, and when its advantages can be extended to any person deprived of sight, an application should be mailed to the librarian of the Halifax School for the Blind, for a list of the books in the circulating library, and a copy of the regulations governing their distribution.

THE TEACHERS of the Victoria school, St. John, have formed themselves into an association called the "Victoria Reading Circle," for the purpose of improvement in professional and general literature. At the first of its fortnightly meetings Dr. J. G. Fitch's admirable lecture, on "Literature the Sunshine of a Busy Life," was read and discussed, officers appointed, and a general plan of work for the ensuing year adopted. At the second meeting a critical reading of Compayre's "History of Pedagogy" was begun; and in general literature Goldwin Smith's "Seven Lamps of Fiction," and portions of Sir Walter Scott's "Woodstock" were read.

THE SCHOOL ROOM.

English Composition.

For Primary Classes. Show the children a picture and ask them to write about it. They will have to be encouraged and their attention drawn to certain points in the picture. Select from books and advertisements a stock of pictures so that one may be given to each pupil; or better, put before all the pupils a large picture. Draw the pupils out by asking questions about it, and then have them write what they can.

Again, read a short story and ask the pupils to present a picture of what is told in the story. It may be the story of a cat catching a mouse. If told in an interesting way the pupils will (with a little encouragement) do their best to reproduce it in picture.

See that your pupils have thoughts to express before they attempt to express them. The first essential is, that the child have something to say on the subject selected before he attempts to write.

Have your pupils express their thoughts in correct language, and always in such words as they understand.

Encourage pupils to read and then to reproduce what they have read, either in newspapers or in the works of standard authors.

Encourage them to refer to the dictionary whenever in doubt as to the correct meaning or proper application of the word.

Encourage them to read the best and most classic authors, to discover, if possible, the essentials which make their styles pleasing. Reading literature of a captivating style will tend to give one power to form a pleasing style of one's own.

Give occasional exercise in transposing poetry to prose. This will require the learner to remodel many of the sentences and express them in a different form.

For Advanced Classes. The following composition, descriptive of a photograph of Evangeline, was written by a young lady in one of the normal schools of the west:

A Description of Evangeline.

The picture here represented is certainly one of artistic taste and skill. It would require a careful study and a critical eye to detect any faults, so beautiful is the illustration.

The subject is a summer scene, showing Evangeline strolling through a rich, green meadow, with pitcher in hand, and four calves lingering near her, with their soft, dreamy eyes looking out in sweet simplicity.

The characters in the picture are so arranged as to reveal each subject in a most pleasing manner. Evangeline is well represented, her entire form being shown. The calves crowd near her as though they feel safe under her protection. Her hand falls caressingly on the back of one, while the others stroll as near as possible. The two farther in the rear lay their heads fondly together, and all look bright and cheerful as the rays of the morning sun on a bright June day.

Evangeline is dressed in simple, plain clothing, with a morning cap covering the back part of the head and all the hair, save a few curling locks that resist the bondage and fall gracefully down over the white forehead and temples.

Expressive dark eyes look out from beneath a curtain of heavy fringe, and the firmly set mouth makes the face a scene of study and intense interest. The swan-like neck is entirely revealed, and a soft collar clinging to the rounded shoulders is her sole ornament.

The ground at her feet is covered with the beautiful flowers of the meadow. The sweet simplicity of the scene, mingled with the beauties of nature, produce a pleasing and beautiful effect.

The background stretches back across a wide expanse of meadow, including a higher portion of land covered with flowers. A cluster of trees with wide-spreading branches may be seen still farther back. These, with the summer sky and a few tinted clouds, make in themselves a pleasing picture.

The entire scene is one of entrancing beauty. The sweet face of Evangeline, the innocence and purity of the characters, lead one to deeper thoughts and higher ideas of life. None can behold the bright, glowing face of Evangeline, and think of her sunny disposition, her sweet patience and trusting faith, but he feels inspired with purer thoughts and loftier ideas.

The study of synonyms is an excellent exercise to make pupils acquainted with shades of meanings in words. Make a list of such words, give their derivation and accurate meaning, and ask the pupils to write sentences containing them. The following extract will serve to illustrate:

Shall and Will: (1) Both are derived from the Anglo-Saxon. (2) Both relate to some act. (3) *Shall* in the first person simply predicts or denotes futurity. *Will* denotes intention or determination. In the second and third persons the case is reversed. Hence, it is absurd ever to ask a question in the first person, using the word *will*. (4) Not, *Will* I go? or, What *will* we do? but, *Shall* I go? What I *shall* do? There are similar distinctions between the past tenses, *should* and *would*.

Exceed and Excel: (1) Latin. (2) To surpass. (3) *Exceed* is to surpass in any quality. *Excel* is to surpass in any good quality. (4) Henry *exceeds* his brother in mischief. She *excels* her friend in generosity.

Fault and Defect: (1) *Fault* is from the Latin, *defect* from the French. (2) Imperfect. (3) *Fault* denotes something improper or wrong. A *fault* is a mistake. *Defect* denotes the absence of that which is necessary to make completeness or perfection. A defect is a deficiency. (4) Mary tore out the page, therefore the *defect* in the book was her *fault*.

Instruction and Education: (1) Latin. (2) Information, knowledge. (3) *Education* includes instruction, growth and development of the faculties, moral discipline, and the whole training made use of for improvement in every way. *Instruction* is the communication of knowledge. (4) A person may cease to receive *instruction* in a certain branch, but his *education* is never completed.—*Common School Education.*

INTERPROVINCIAL CONVENTION.

Proceedings of the High School Section.

The High School Section met in the Hall of the Victoria school, at 8 A. M. o'clock, on Tuesday, July 18th. W. M. McLean, A. B., of St. John, occupied the chair, and H. V. Bridges, M. A., of Fredericton, acted as secretary. In addition to the principals and teachers of high schools throughout the Atlantic Provinces, there were present Sir Wm. Dawson, Dr. Bailey, of the University of N. B., Professor R. G. Huling, of New Bedford ; and others.

SCIENCE IN THE HIGH SCHOOL CURRICULUM.

The first paper read was by A. H. MacKay, B. A., B. Sc., Principal of Pictou Academy, on "Science in the High School Curriculum."

Mr. MacKay said :—

Fellow Teachers:—I venture some thoughts on our High School Curricula, solely with the object of eliciting an interchange of opinion as to what we should attempt in the present stage of our educational development, so as to produce the most desirable results. In the Pictou Academy, during the course of my incumbency, I have had charge successively of the instruction in each of the departments, English, classics, mathematics and natural science. The latter department is now my special care, not so much from choice as from necessity. I have had some opportunity, therefore, small as it may have been, of indulging in the pleasure incident to a more or less specialized attention to each of the leading groups of high school work; and can somewhat appreciate the genuineness of the feelings which often with the brilliancy as well as with the erratic playfulness of auroral corruscations have presented as the sole superior form of mental culture, now the classical, now the mathematical, and now the vernacular literary or the scientific.

We meet together here from different environments. The world, while in some leading respects the same to all of us, has been a different world to each of us. Even the poetic reference to *Jupiter frigidus*, to the whisper of the zephyr, the monotone of the ocean, or the blue-bell tossing in wind, lights up different pictures in the galleries of our memories. Our minds have been developed by contact with different phases of this great world, our delights have sprung from various sources; and as many flavored as are our tastes are the hues of what we may think best for our common humanity. With such thoughts in our minds we are ready to understand that there may be sources of enjoyment as deep as ours in realms of nature not visited by us; that there may be superior culture in mental gymnastics which we have not tried; and that the *consensus* of the teachers of three provinces is likely to be a safer guide than the notions of the most experienced unit among us. Let us therefore simply compare notes, and learn through others what we may not have learned ourselves.

The school is only an adjunct in completing the education of the individual. Education I would briefly define, as the harmonious development of all the faculties of the being, with special reference to his environment. When the individual is mature the education must become more special or technical. This stage lies beyond the proper realm of the high school. For the mass of mankind it must lie only immediately beyond the common school. For an extremely small percentage of humanity it may lie beyond the university. This technical education, which fits for the business of life, varies from the simple art of the fisherman to the mind-wrestlings of the metaphysician, to the inventive skill of the scientist who creates a new industry. The secular school is simply an adjunct, to supply at the proper time and in the best known manner that kind of culture which will most economically advance the good of society. The high school may be considered to be the general, all round developer of the mental powers of those who are likely to be the leaders in all the different phases of human activity. A few will go to the universities and specialize for the learned professions, some in the direction of letters, some in the direction of art, some in the direction of science, and so forth. Still further, specialization in each of such groups will give us those who should be the first among the leaders in thought, and the pioneers in invention. This leaves the high school responsible to a great extent, for directing the tastes and suggesting the courses which may in future be developed in the under-graduate career and post-graduate courses of the universities and in technical colleges. It also leaves the high school responsible for much of the general contour of mental habits in the greater number who leave it for the profession of teaching, of medicine, of law, of theology, and for the legion of industrial vocations which now demand intelligent laborers and directors. The modern high school has to lay a much broader foundation than the olden; but as the limit of human accomplishment remains pretty much the same as before, we may have to cease to build some of the foundation walls so high. The high school was once a sort of technical school for the literary arts and professions. Now we are expanding it to give the elements of a truer—because a wider—culture. The guiding star of the old was beauty of form in expression; of the new, beauty of truth in substance. The former was most intent on making a polished man in speech, the latter on making a knowing man. The one perhaps produced the finer flashes of wit, the other the steadier light of wisdom.

To particularize, I have been thinking that if our high schools could do a little more work in the natural sciences, and that little in a truly scientific manner, they would give a higher form of mental culture, and at the same time they would tend more to the industrial development of the country. The study of the natural sciences is the investigation of the real nature of the world which surrounds us on every hand, which limits our sovereignty over matter, and from which we have to win our very life as if by conquest. Truth of this kind is becoming yearly of greater importance as we see arise before us not in the very far distance graver social problems. Our high schools would in this way become indirectly beneficial to hundreds of thousands who never entered their doors. A boy of genius gets a peep into the fascinating arcana of nature, perhaps simply in an oral lesson. His mind follows the bias, and at home, or in a technical college, or as an employe in a foreign factory, he grasps an idea of invention or application, and returning to his native country, he originates a busy hive of industry, where, before, the bee alone collected honey from the flowers of the wild wood.

But natural science is also the great eliminator of superstition, the great discoverer of natural truth; and of all the elements of mental culture, truth is the most invaluable. Buy the truth and sell it not. Galileo's telescope broke down a magnificent human theory, but a false one. There were mourners for it as there were for the bad though beautiful Absalom; but the world was the gainer, notwithstanding. We cannot study nature deductively. Because pure water is good, we might make a fatal mistake to act as if all transparent fluids were potable. Calomel and corrosive sublimate have many things in common, but experiment proves a very important difference which the profoundest metaphysical thinking would never have discovered. A graduate from a superior literary college might see nothing improbable in the proposal to manufacture heating or illuminating gas from water, and he takes stock deep in the concern. Why not? Is not gas already made from coal dug from the earth? And water is known anyway to be composed of two gases which will produce intense heat when burned together. Yet he would laugh if you proposed to make a bonfire out of a pile of ashes. He reads that magnets are made by a current of electricity, and that lightning is only electricity; and then repeats the wondrous story of a south-western paper,—that a man was struck with lightning in a late thunder storm, and became so magnetic as to slam with tremendous force against every lamp-post on the street side; while the only lightning really *observed* to have such an effect was the brand sometimes known as Texas whiskey. He knows that iron wonderfully attracts the magnetic needle; then he invests in a mineral rod for the discovery of gold. The tent caterpillar moth fixes numberless fairy rings around the twigs of his apple trees in the sunny summer. He sees them not on the naked twigs in winter. But in June *Providence* sends hordes of caterpillars from the clear sky which strip the orchard. How often is Providence blamed for the results of improvidence!

Again, the general effect of the study of nature is to make a man accurate in observation and attentive to his environment, conditions more than ever necessary in this age for success in every one of numerous human employments. We commence the work in our common schools by outlining a course of oral lessons on nature, which are expected to be utilized without materially increasing the mnemonical or task work of the pupil. Nay, we believe that, where properly managed, these lessons serve as a recreation—a relief from the other labor. In the high school this course might also be made more complete and systematic without adding to the mental worry of the student. The inductive study of nature, in fact, is one form of recreation which is spontaneously resorted to as a relief from the mnemonical efforts in language study and the wear of mathematical thinking.

But as it might be necessary to give more time for these subjects, would it be objectionable (1) to reduce the classical work of the high school to what is required simply for creditable matriculation into our universities? Let the university give the classical education.

(2) Reduce the details of history to be memorized. It requires considerable maturity of mind to read history with profit. As a general rule, an epitome cannot give the young student a true idea of the past. He simply reads his own childish knowledge into the outline of events, and has simply a string sometimes of very inconsequent fancies linked together by dates. How can a person who is not able to form some correct idea of modern politics, understand any outline history? He might have some chance with a fully written one. But still an outline is necessary in order to fix the perspective of what he may afterwards come to know. Let us then not burden our course with too numerous details. But instead, explain clearly

our own system of government, federal, provincial and municipal; their constitution and functions; our law courts and the character of common and statute law. When he has an idea of how present society is moved and governed, he will then be in a position to understand the history of society passed away.

(3) Book-keeping in the high school might possibly form part of, or be extended into an outline of political economy, the connecting links being commercial usages, laws and exchange.

(4) Geography might be extended to include uranography. Eliminate the memorization of details of descriptions of foreign places. These should never be forced into the memory. The atlas is always fuller and safer in case of a journey. But, strange to say, tens of thousands are spending hours in memorizing the outlines of the counties of England, or the boundaries of Saxony, which they never expect to see; while the constellations of the sky, which may be seen simultaneously from every point of a continent, may be completely unknown; and the track of a meteor cannot be fixed by reference to the stars. At present there is an outline of astronomical work given in connection with geography in some of our text books. The determination of latitude and longitude, and an outline of the solar and stellar systems should be overtaken in a high school course.

(5) Chemistry and physics should, if possible, be taught experimentally as well as mathematically. I mean that the student should, if possible, perform many of the experiments for himself. This will make the teaching of such subjects much more expensive and troublesome than the teaching of the literary and mathematical subjects. And yet my experience seems to prove that it is necessary. Brilliant lecture-table experiments are always very popular, especially when there are loud explosions, or when the oxyhydrogen jet is dissolving somebody's jack-knife into liquid drops amidst an aurora of scintillations. But for the mass it is an exhibition of fireworks. Deceptive experiments would be as real to them as the most carefully conducted ones. It is only book work illustrated for them. It does not bring them into contact with nature; it does not force them to discover how natural truth is found, as if they had to make the experimental demonstration themselves. Now, the problem is, how can a class of 50 or 60 have arrangements made economically, under our general present circumstances, to do some systematic, practical work? I have as yet failed to solve the problem. I select two or three assistants from the class, who assist in conducting lecture experiments. I make the class do the mathematical calculations and my assistants test the points experimentally before them. Yet, at the end of the hour, a student, and not youthful lad either, in a front seat, who for a long time must have noticed the effervescence of hydrogen in the generator, which was ostentatiously charged in his presence too, asked the question, "What is in that bottle there boiling up?" Practical chemistry is optional with us. Classes of from six to ten work simultaneously in the laboratory; but to encourage the extension of that system to a class of fifty or sixty would nearly require a special teacher for chemistry, especially in the absence of a laboratory adapted for the work of a *large* class. In physics, of course, a great number of experiments can be given the student to work out at home with extemporized apparatus. Comparisons of the results of these in class are always of the greatest interest to each, and therefore of the very greatest value from more than one point of view.

(6) Then in the high school there should be a systematic outline of mineralogy and geology given—an outline, with practical work. A number of common minerals should be examined physically and a few examinations made with the blow-pipe. Some practical work is necessary in order to make an outline convey real information. Local geology should be made a specialty in this outline.

(7) There should also be a systematic outline with practical work in biology, to which we may annex human physiology.

I think botany is now taken up practically and systematically in our high schools. It is the first of the natural sciences to be profitably undertaken. Classification is not so difficult as in other departments, while the material is abundant, convenient to work with and easily preserved. An acquaintance with the characters of the leading orders and the analysis of at least fifty species of flowering plants, are prescribed for Nova Scotia.

To round the outline with what is most useful for general society, there should be a few demonstrations of the organic causes of putrefaction, fermentation, etc., just to reveal the character of the invisible demons in the air which sometimes play sport and sometimes havoc in the affairs of men. This would reveal, for instance, the nature of the care to be taken in the treatment of canned fruits and meats, and the preservation of food in the household generally. It would also give an intelligent basis for general sanitation and the prevention of infectious or contagious disease. If the student could see some chicken broth filtered clear in a test tube, become opaque and fetid in a day or two; if the microscope revealed the particulate nature of the opacity, the millions of unicellur and constantly dividing plantlets; if the very same fluid in its early stage of putrefaction is again boiled to kill the micro-vegetation, filtered to clear it, and again boiled with only a cotton-wool wad to close the neck of the tube or bottle; if, when all this is done he finds the liquid remains clear for weeks, although the air can pass through the cotton-wool stopper, he will be convinced that it may not be the presence of air, but the presence of some living germs carried in the air, which produces putrefactions, fermentations of different kinds, and even many forms ot disease. He pulls the cotton wad out in the air of the school-room and replaces it instantaneously, and in a day or two the preserved fluid becomes fetid and cloudy as before. Notwithstanding the popularization of such subjects in the press, I have found the most intelligent people sometimes undoing all their work in carrying out a rule of sanitation, disinfection, or food preservation, just by a little slip which no one understanding the true nature of the danger would be likely to make.

Closely connected with this is zoölogy. A systematic outline of our native fauna, with some few dissections of type forms and tracings of life histories, should be made, if possible. More particular attention should under this head be paid to forms affecting human industries or interests. Physiology, which is already prescribed for high school work, would also be made much more intelligible by a rounded course of this kind.

But, then, these suggestions will be met with the cry, "Why, you are prescribing a university course in natural science—several of them; or, if you only intend to give outlines, you are making your students superficial scientists; at the end of the high school course they will imagine themselves to have mastered the whole circle of sciences." Such would be the effect if they were taught outlines merely from the book. But we must remember that the outline is given to fix the relation and position of the little we may have an opportunity of knowing in the great scheme of nature, so that the group which we may have the best opportunity to study may not be considered to be the whole or the most important, but only a speck of knowledge in a vast system. A person came to me who was beginning to be very much interested in insects, and asked what book I would recommend. He made up his mind to master the science of entomology this summer. I told him I did not know of a book which would give him all the insects, but I asked him if he thought he could make out or classify a new one each day during the year on an average. He thought he could. Well, at that rate, I had to tell him he might know all the insects which have been already observed in about—one thousand years. It will be seen, therefore, that we have but a very slim chance of being able to know all that is known, without discovering anything new, even in the section of a sub-division of a division of any one of the natural sciences. If we knew one section thoroughly, we might be very useful in discovering new facts in that direction; but such specialized knowledge would not at all be one fitting us for general citizenship.

The real, practical study, however, of dominant local type-forms in every department of nature surrounding us, would give us a more correct view of the laws which govern us and our environment, and it would tend to make us more accurate observers, and to eliminate errors of inference which makes the world so different to many people from what it really is—so different that their lives are simply a series of blunders from beginning to end, primarily on account of the ungenuineness of their perceptions of what surrounds them.

All the work of our high schools is science combined with art. The study of classics is a science, and a natural science, too, without wresting the phrase severely. It is simply a speck in the realm of natural science, however—the science of the naturally developed sounds by which the Greeks and Romans interchanged ideas. This fragment of natural science has, however, been well developed in our old high schools since the time of Sturm, in the sixteenth century. But its value has been greatly exaggerated.

The coördination of the various subjects forming a course of study is a portion of the problem. What is the proper amount of stress to lay upon each in order to secure the best results? We must balance, of course, their values as mind discipliners. We ought also to consider, as life is so short, their utility combined with their disciplining power. Those subjects which combine both are certainly the best. As the high school must finish the general education of the most of its students (by natural selection the future leaders of our country), it is important that its general educational system should produce powers trained to make the best use of every phase of our environment; that it even should suggest new lines of industrial activity wherever such might be profitably originated.

A high school with a three or four years' course might in one year give an hour a week or more to botany, in the next to zoölogy, and in the next to mineralogy and geology, for instance; in addition to physics, chemistry and physiology. But then you are multiplying subjects, some one will say. Call the whole group then, for him, Natural Science. The subject is one.

Finally, I would suggest the formation of museums of local natural history collections in connection with every high school. These collections would grow from the simple exertions of the young students themselves; and, on the other hand, the existence of a museum would stimulate collecting; and the beauty of the whole matter is, that such work, instead of costing anything, would encourage observation and give much innocent and useful pleasure, and probably save many from injurious pleasure. Those museums should also contain home-made apparatus for demonstrations in chemistry and physics, as well as imported apparatus.

I throw out these suggestions simply as feelers. To bring before you a curriculum, I would require to assume a set of conditions that might not be common to any two of our high schools. I have had in my mind a high school with three or four teachers. The idea, summarized, is the giving of an outline of the whole circle of the natural sciences in our high schools, with practical, objective work confined to the most prominent types, especially those of local or industrial interest.

This, I contend, could be done without injuring the efficiency of the work in the old standard subjects.

The greatest obstacle to the success of proper science teaching is the extra work required of the teacher; first, in preparing apparatus for practical demonstrations; secondly, in putting away and cleaning apparatus. One hour's teaching of experimental physics involves more effort than three hours in teaching mathematics or classics. The same holds true to a greater or less extent of the proper scientific treatment of all the other departments of natural science. This should be considered in fixing the teaching hours of the science teacher, as well as in fixing his salary. As it is not generally considered, we need not be surprised that proper teaching in this department will long lag behind even the convictions of both school boards and teachers. The natural conservatism of the old educational system tends to reproduce its own likeness with all the persistence of other reproducing organisms. This, combined with the natural inertia of humanity in doing extra work for nothing, makes progress in the development of natural science more up-hill work than in any other department.

This consideration, I hope, will be accepted as a sufficient reason for calling your attention to these points, and asking for suggestions in connection with them. The very looseness of my remarks shows that I have endeavored to place nothing before you further than what may be sufficient to elicite the interchange of opinions between representatives of so many and so widely separated high schools as those of the three Atlantic provinces of Canada.

METHODS OF PLANT STUDY.

G. U. Hay, Ph. B., St. John, read a paper on "Methods of Plant Study." The following is an abstract: "The study of plants should not be from books but from nature, the books being gradually introduced for reference in the high school and college. To ask pupils to study botanic definitions, and commit to memory pages of a text-book, is positively harmful, begetting a distaste for an interesting and useful study, and filling the mind with a few vague ideas that are soon forgotten. The object of plant study is to train the observation, to institute comparison and form correct judgments. The study of plants may be made useful by combining it with other school work, especially English composition and drawing. Instead of tamely taking conventionalized forms as models, let leaves, stems, branches be placed before the pupils as models from which to draw. Such efforts will be crude and clumsy at first; but they will have the merit of originality. Our forests and fields furnish models of symmetry and beauty that the genius and creative powers of some pupils may yet embody into art, and furnish new material for industrial occupations.

In English composition the study of plants is invaluable, as it furnishes interesting material for oral and written descriptions. The accuracy of these descriptions will be a test also whether the pupil has understood what has been presented to him. The teacher need not be a botanist; but he must be a close observer of nature. He is not to train his pupils to become botanists; but he is to cultivate in them a genuine love of nature, to train them to observe, to think, to compare.

In the high school course the study of plants and other subjects of natural science may be pursued throughout the year; but the summer is, of course, the time when greater progress will be made. Let us agree, then, upon a little more fulness in the subjects of literature in the winter course, and the same for natural science in the summer."

[The remainder of this paper, containing some practical directions for the pursuit of plant study, will be published later.—EDITOR].

Mr. G. J. Oulton, of Dorchester, read a very interesting paper on "The Ornamentation of School Grounds," in which he spoke of the value in education of well kept school grounds and tastefully decorated school rooms.

Principal Creighton, of the North Sydney Academy, read a very valuable paper on "English Literature, and its Place in Schools."

HISTORY IN OUR SCHOOLS.

W. R. Campbell, A. B., of Truro, N. S., Academy, read a paper on, "History in Our Schools," of which the following passages are selected: "He would consider the subject under two heads. First, its practical utility; and second, Does our present mode of teaching history meet the requirements of our schools? Of its practical utility there could be no doubt; but the pruning-knife should be applied to that which usurps the name of history in our schools—the mere tissue of names and dates and dead, meaningless events; in short, such information as has not the remotest bearing on any of our actions. It is the methods employed in the study of history that should be singled out for criticism.

History study, especially at first, should be largely biographical. Events should be grouped around some central figure, or some great drama in history. Too much history teaching is done by requiring pupils to memorize pages of the book and then to recite. All life is taken out of the subject. A few disjointed, ill-fitting and ill-shapen facts are carried away, and the pupil is said to have a knowledge of history. The text-book itself is only an aid. It is the duty of the teacher to make the subject one of living interest, and he should, in sense, be a historian himself.

In the German schools, where the system is largely oral, the study of history is carried on with better success than anywhere else. Teachers specially trained for this work are employed. The pupil, without the aid of any text-book, is led over a large area. The instruction consists of intelligent talks upon the leading points and prominent characters of history. He is then required to review the subject with the aid of a small text-book, consisting merely of names and dates. This serves as a help to suggest the leading points brought up. The subject, too, is entered into much more fully than in the first course, For example, a pupil in the first course might be told the story of Hannibal, he will now be able to take up the story of the second Punic War. This plan, begun in the common schools, is continued in the high schools, the text-book being always made subordinate to oral instruction. This system keeps in view the fact that the pupil is not yet ready for hard study. One half the time spent by a boy in prodding over a difficult lesson in the book is wasted. A few conscientious efforts may be made to master it; but the greater part of his time is occupied in thinking over his last game of ball, or counting when the next will come. The average high school pupil spends five or six hours daily in school. To this there is added sufficient home work to occupy as much more time. Hence, it is not assuming too much to say that eight or ten hours study every day is required to cover the prescribed work. The result is that the pupil is injured, not from over study, but by doing in a superficial manner what ought to have been done thoroughly. Time has been wasted, little or no knowledge has been gained, while the pupil has been encouraged in habits of careless preparation.

Compare the study of history with that of science. The latter is begun in the primary grades and carried up through the common schools and the first year of the high school course, before any text-book is required. The pupil is taught to select, examine and classify specimens of plants, animals and minerals. The teacher guides his efforts rather than does his work. The result is that the pupil has a more practical and thorough, I might also add extensive, knowledge of the subject than could possibly be obtained by memorizing the book.

History, too, should be presented objectively to the eye. Its leading facts should be grouped and spread out before the pupil on charts and boards. Thus information is arrived at through two different channels, each of which are alike effective. Charts and drawings show at a glance the condition of the country at different periods. The progress of art, science, literature and civilization becomes at once evident. The pupils are thus encouraged to continued original research.

History, to be useful, must be thoroughly practical. Studied as disconnected, social, political or religious phenomena, it has neither sense nor meaning. Studied at random, as a mere series of hap-hazard events, as a work of chance, it retards rather than advances civilization. It was to this system of "storing the mind with crude, unruminated facts and sentences" that Bolingbroke objected, when he ridiculed the ancient conventionalism and time-hallowed traditions, by which teachers rely more on the repetition of meaningless assertions than on independent enquiry and self-thought. It was to this method that Vico objected, when he urged for a more philosophic method in the study of history. He claimed that there was an organic development in the different epochs, which could only be understood through a knowledge of the social and political conditions of nature. It is against this system we must contend if we would make the study of history interesting to the student, and productive of good results."

After the reading of the papers an animated discussion took place on their leading features.

Sir William Dawson, being called upon, said that he had listened with pleasure to the papers read, and was much pleased with their tone and spirit. He believed that science teaching in elementary schools must be simple, and based on objects which could be seen and handled, and on experiments which the pupils could make for themselves. Everything depended on a judicious teacher, who loved and understood what he taught. The normal schools and colleges should provide such teachers. In high schools having special science masters and mistresses, who should be young people trained in the universities, more might be done. But it should still be practical and suited to immature minds, and bearing on the explanation of common things. There need be no conflict between science and the older subjects. Much experience and observation showed that those schools into which science had been skilfully and prudently introduced did the best work even in the subjects of English classics and mathematics.

Dr. Bailey referred to his long period of service as teacher in New Brunswick, and to the indications of fresh interest in better methods of education, especially in natural science, as indicated by the yearly bulletins of the Natural History Society of N. B., the science articles in the EDUCATIONAL REVIEW, and the book on natural science which he had recently published. He advocated the study of physical geography in order to become better acquainted with our surroundings and natural features of country.

Prof. Huling was glad to see that the course of study here was on the same lines as that in the New England States. He gave a detailed account of the work there, especially in natural science and English.

Messrs. J. G. A. Belyea, J. M. Palmer, E. MacKay, A. H. MacKay, W. R. Campbell, S. C. Wilbur, G. U. Hay and others, took part in the discussion.

TEACHERS IN COUNCIL.

PRINCE EDWARD ISLAND TEACHERS' CONVENTION.

The teachers of Prince Edward Island met in convention on the 4th and 5th of October. Notwithstanding the great gathering at St. John in the month of July the interest in the local meeting appeared to be as lively as ever. The number of members enrolled showed a slight increase over last year, while the spirit and zeal of those who shared in the transactions were as conspicuous as on any previous occasion. Two very commendable features of the proceedings were the absence of vague and useless discussions, and the eminently practical character of all the papers, and the criticisms to which they were subjected. The President, Dr. Anderson, in his opening address, and Miss Lawson, in the first paper which was read, expressed themselves in strong and unequivocal terms, respecting the necessity of directing the business of the Institute towards such subjects as would be of service to the teacher in the performance of his duties. And surely there could not have been given a more satisfactory response to the general demand than the eminently practical address of Rev. Father McMillan, and the excellent essays of Messrs. Daly and McSwain. Mr. Daly, a teacher of experience and repute, emphasized the necessity of sound moral instruction in our schools, and expressed his conviction that no better means of communicating it could be devised than the living example of a conscientious and honorable teacher; while Mr. McSwain put forth a plea for industrial training, characterized by good sense and moderation.

The paper read by Mr. Kielly, on "Teaching in our Public Schools," was one which from its subject secured the attention of the meeting, and by its force and vigor commanded the respect, if it did not win the assent of all his auditors. He complained that the course of studies was not sufficiently flexible; that, while suited to the requirements of those who attended regularly throughout the school year, and those who proceeded from grade to grade till they were able to matriculate into the Prince of Wales College, it acted unfair towards those pupils whose need was a purely English education, and whose equipment for the business of life was that of the farmer and artizan, by demanding an undue proportion of the teacher's time for the advanced pupils, and thus curtailing his opportunities for assisting the others. In this view he was supported by Mr. Allen Stewart and Mr. Campbell. It was maintained on the other hand by Messrs. Neil McLeod, John Matheson, Gallant, and Colin McPhial, that if the teacher distributed his time judiciously, and conducted the business of his school with diligence and skill, he could easily accomplish all that was required of him; and it was noted that the schools that send up the best students to the Prince of Wales College are those that are reported as being most successfully taught throughout. The President, the Chief Superintendent and Mr. Seaman also took part in the discussion.

The Chief Superintendent reported as chairman of the committee appointed last year to co-operate with similar committees from Nova Scotia and New Brunswick, in arranging for the meeting of the Interprovincial Convention at St. John, and suggested that an effort be made to induce Colonel Parker, of Chicago, to visit this Province, and be present at some meeting of our Institute, at no distant date.

The public meeting which was held on Thursday evening was a pleasant and successful incident. Addresses were delivered by the President, Rev. S. W.

Jones, Hon. Senator Haythorne and Mr. A. B. Warburton. Mr. Jones spoke words of encouragement to the teachers, while Mr. Warburton impressed upon them the necessity of care and thoroughness in the discharge of their duty. The Senator selected as his topic the relation which ought to exist between the general education of the country and the technical instruction of the farmer. He is convinced that the higher the intelligence of the community the greater will be the advancement of our chief industry. Farmers will be able to read, understand and apply the discoveries of others, and conduct experiments themselves. By superadding to the education already provided by the state a training in agriculture and kindred subjects, there will be put within the reach of the farmer an instrument of great utility, which, if rightly handled, will add much to his own wealth and the material welfare of his country. Readings, recitations and songs by members of the Institute, and a well trained class of pupils under the efficient leadership of Miss Burr, contributed greatly to the enjoyment of the evening.

The following officers were selected for the year 1888—1889 :

President, Mr. Lemuel Millar, Principal West Kent street school, Charlottetown ; Vice-presidents, Principal McLeod, Summerside, Inspector Cain, and Miss Burr, Principal Upper Prince street school, Charlottetown; Secretary-treasurer, Mr. Allan Stewart, Stanley ; Corresponding Secretary, Mr. Francis Curran ; Executive Committee, Messrs. J. D. Seaman, J. P. Wickhem, A. B. MacDonald, J. Daly and H. Campbell, Misses Sarah Harris and Maria Lawson.

CARLETON COUNTY, N. B., TEACHERS' INSTITUTE.

The eleventh annual meeting of the Carleton County Teachers' Institute was held at Woodstock, on Thursday and Friday, October 11th and 12th. R. P. Steeves, A. M., Principal of the Grammar School, was appointed Acting President. W. T. Kerr, the Secretary, read an interesting report, reviewing the work and attendance of the Institute since its organization. He presented the claims of the EDUCATIONAL REVIEW upon the teachers. The Superintendent of Education, Wm. Crocket, A. M., was present, and delivered an address. Mr. Charles McLean read a paper on English Literature which gave rise to an interesting discussion. On Thursday the Institute was divided into two sections, the ladies discussing the subject of Political Economy, and the gentlemen that of Industrial Education.

The officers elected for the year 1889 are : Chas. McLean, President; Miss Bessie Good, Vice-President; Amasa Plummer, Secretary-Treasurer; with F. B. Hovey and Miss Louise Noble as additional members of the Executive.

NORTHUMBERLAND COUNTY, N. B., INSTITUTE.

This Institute held its twelfth annual meeting on Thursday and Friday, at Chatham, on the 18th and 19th of October. Inspector Mersereau opened the meeting in the absence of the President. The following officers were appointed for the year: T. A. McGarrigle, A. B., President; Miss Olivia Parker, Vice-President ; J. M. Palmer, Secretary-Treasurer; Miss Agnes G. McIntosh and Miss E. McLachlan, additional members of the committee of management.

Papers were read on "Canadian History" by Mr. Parker; "How to secure Concentration of Thought in Study and in Class," by Miss Bessie J. Allock; on "Teaching Useful Knowledge," by Miss Laura Eddy. The papers and addresses were practical, and showed a careful appreciation of correct methods. Among other subjects discussed was "The Proper Ventilation of School Rooms." Mr. Palmer then considered "Character Building—the teacher's highest aim." He defined education, spoke of the great powers of mind which man possessed and the necessity of the teacher directing these powers into channels which render his public life a success. The summit of education was truth. This should be the aim of life regardless of opinions of others. This led to independence, self-reliance and true manliness of character. A life should stand for something and leave its impress on the world. A public educational meeting was held on Thursday evening, which was largely attended.

ALBERT COUNTY, N. B., INSTITUTE.

This Institute held its twelfth annual meeting at Harvey, on Thursday and Friday, the 18th and 19th October. The following officers were elected for the ensuing year: President, Ralph Colpitts, A. B.; Vice-President, Miss C. Reid; Secretary-Treasurer, Thos. E. Colpitts. The following were elected additional members of the Executive: Chas. H. Edgett and Chipman Bishop.

Papers were read as follows: "How to Teach Drawing," by Judson A. Cleveland; "The Influence of the Personal Character of the Teacher in the School," by W. H. Burns; "Intelligent Teaching and how it may be Secured," by Chas. H. Edgett, of Harvey. On Thursday a public educational meeting was held, at which Chipman Bishop gave an address on "The Teacher."

The York County, N. B., Institute will hold its annual meeting on Thursday and Friday, the 20th and 21st of December.

The Teachers' Association of Inspectoral District No. 5, Nova Scotia, met under the presidency of Inspector Roscoe, on the 11th and 12th October, in the academy building, Windsor. Geo. J. Miller, principal of Hantsport school, read a paper on "Grammar in the Common Schools." The trend of the discussion was in favor of oral teaching to the end of 7th or even 8th grade. Miss Mary Calder read a paper on "The Kindergarten." Miss Burgoyne, of Windsor, gave a lesson on "Insects" to pupils from the 5th and 6th grade. The Association appeared to be particularly delighted with this exercise. E. A. Read, principal of the Brooklyn schools, read a very suggestive paper, entitled, "A Course of Reading for Teachers." The Educational Review received a complimentary position in the course. Principal Miller, of the Collegiate school, spoke in high terms of the paper. He has just come from Ontario to take charge of the Collegiate school of King's college. The Question Box next created some amusement and elicited much information.

In the evening a public educational meeting was held, presided over by the Mayor. Present on the platform were, David Allison, LL. D., Superintendent of Education; Rev. H. Foshay, Dr. Young, of the U. S. Consulate, Inspector Roscoe and a number of others.

The Superintendent of Education, in his address, referred to the advance which has been made in education within the last fifty years, the magnificent, possible industrial advantages of our country, the necessity of training the young so as to develop all the faculties of their complex nature, not forgetting those having a relation to our industrial development. The kindergarten system has been introduced. The lack of proper articulation between the common and high school on one side, and the universities, professional colleges, and schools on the other side is gradually disappearing. The success of the school system, however, depended chiefly on the high conception of the duties of their calling by the teachers themselves; but also on the due appreciation of the services of good teachers by the public. Towards the close he alluded to educational progress in the Canadian Northwest, as noted by him in a recent trip through that region of the Dominion. The address was loudly applauded. Brief addresses were afterwards made by Rev. H. Foshay, Hon. M. H. Goudge, Rev. W. Brown and Mr. J. J. Anslow.

On the second day, Miss Mumford, of Hantsport, read a paper on "Character Building in School." Mr. O. H. Cogswell read a well written paper on "The Endogenous Nature of Education." He raised a breeze by criticising the government for reducing the grants to teachers, while they raised their own salaries. Prof. Snell conducted a lesson in writing, illustrating his system. Then followed papers by H. S. Shaw, principal of Berwick schools, on "The Common School—a Teacher of Morality;" and by Principal C. F. Hall, on "Discipline." Prizes were awarded for the best *writing* and *drawing* work sent in from the schools of the inspectorate.

The officers for next year are: President, Inspector Roscoe; Vice-President, Principal Hall; Secretary-Treasurer, Principal Bishop; Executive Committee, Miss Burgoyne, Miss Mumford, Principal McLeod, Principal Millar.

The Teachers' Association for District No. 4, met at Digby, on the 4th and 5th October, under the presidency of Inspector Morse. The other officers are: Wm. McVicar, Vice-President; Burgess McMahon, Secretary-Treasurer; A. D. Brown, W. C. Parker, Miss Emma Bacon and Miss Jessie Titus, Executive Committee.

David Allison, LL. D., gave the opening address, in which he pointed out some of the special advantages derived from such gatherings, and referred particularly to the conventions he had lately attended at St. John and at Chicago.

A paper on "Nature Lessons" was read by the Secretary. Clubs were proposed to awaken a deeper interest in the "Nature Lessons" required by the course of study. Dr. Allison believed the teachers were over-estimating the difficulty presented by the oral lessons, and said the primary object was to secure the objective presentation of knowledge, and that teachers should not be unwilling to acquire some knowledge of botany, zoology and mineralogy. A prescribed text-book would be of doubtful service, affording a means of going back to the method of book-work to the exclusion of the objects themselves. Miss Jessie Titus, of the Digby schools, conducted a very interesting illustrative lesson on ventilation. An essay was next read by Miss Emma Bacon, on "How to make the School and School Work Pleasant."

Mr. W. H. Magee, presented in his paper, "Thoughts and Suggestions" of prime importance in education. Among the topics tested were the necessity of devotion to work to secure an honorable standing and suitable remuneration for labor. Especial attention should be given to the inculcation of principles of patriotism and temperance. Agriculture should occupy a prominent place in the school curriculum. Stress was laid upon the need of constant study, and progress on the part of the teacher who should use available means to secure every advantage that would aid in perfecting his skill as a workman. The reading of the paper was followed by brief speeches from Messrs. Oliver, Lyons, Brown and Dr. Anderson. Mr. McVicar in the course of his remarks referred to the method of teaching patriotism in the American schools and characterized it as telescopic, where in viewing their own country they used the small end, but when observing their neighbors they reversed the instrument.

The Friday morning session was given to papers from Mr. O. Lyons, on "Our Educational Status and the Relative Importance of Studies," and Mr. James Armstrong, on the "Benefits of Historical Study." Mr. Lyons presented a comprehensive view of the educational systems of the provinces of the Dominion and of various States of the Union. A comparison with statistics of the attendance and teachers' salaries showed Massachusetts highest in attendance, followed in order by N. S., P. E. I. and Ontario. The application of a compulsory attendance law would correct the evil in this particular.

Dr. Allison said there was need of caution as to the significance of the figures quoted in comparing the various systems of education. Massachusetts, for example, from the shortness of the school year through showing a higher per centage of attendance represented actually a smaller attendance than Nova Scotia. In the Ontario school system the common schools have their peculiar work, and young persons desiring high school training must go into the high schools to obtain it. While such a course may be suitable for Ontario with its numerous towns it was scarcely adapted to such conditions as exist in Nova Scotia. Mr. Armstrong, in his paper, after showing what instructions should be aimed at in teaching history, domonstrated the value of this study from important facts which it yielded at small outlay of time and labor, and as affording a means of intellectual and moral culture. On Thursday evening an appreciative audience was addressed by Dr. Allison, Dr. Ambrose, and R. G. Munro, Esq.

Examination of schools under Methodist board in Twillingate educational district took place during Monday, Tuesday and Wednesday of the present week. From the Rev. G. S. Milligan, LL. D., superintendent of Methodist schools, we learn that marked improvement was manifest, both in attendance and in general progress, in all the schools. This is a matter of thankfulness and cause of congratulation to all concerned.—*Twillingate (Nfld.) Sun.*

PERSONAL.

G. R. Parkin, M. A., of Fredericton, sailed from Liverpool this week, and is expected home on the 16th.

Prof. F. H. Eaton, M. A., of Truro, passed through St. John last week, on his way home from Boston.

A. St. George Richardson, B. A., nephew of Mr. I. T. Richardson, St. John, recently principal of Wilberforce Academy, Chatham, Ont., has been appointed to a more advanced and lucrative position in the Southern States.

Among the passengers from Halifax to Liverpool recently were Miss E. T. Harding, instructor in painting at Acadia seminary, and Miss Blanche Bishop, B. A., of Greenwich. They are on their way to Berlin, where they will spend the year in study; Miss Harding is painting and Miss Bishop studying German literature. Miss Graves, the former principal, and Miss Buttrick, the former teacher of instrumental music at the seminary, are also in Berlin, perfecting themselves in their chosen work.—*Hants Journal.*

A. J. Denton, A. B., of Halifax, has been admitted to the M. A. course at Harvard, without examination. This is a high compliment to Mr. Denton, and to his alma mater, Acadia college.

Miss Orr, of the Victoria school, St. John, after a month spend in studying kindergarten methods, under Miss Woodcock, at Truro, has returned home, and will put into practice kindergarten methods among the primary schools of the Victoria.

Isaac Gammell, B. A., professor of English in the Pictou academy, has accepted a more advanced position in Montreal. On October 26th he was married to Miss Maria A. McKenzie, of Pictou. We extend to them our heartiest congratulations.

Frank I. Stewart, B. A. (Dal.), of Charlottetown, P. E. I., has been appointed Classical Master in the Yarmouth academy. Interprovincial relations in educational matters are evidently increasing.

C. F. Hall, M. A. (Mt. A.). has been appointed principal of the Hants County academy.

J. A. Smith, M. A. (Mt. A.), has been appointed principal of the Digby academy.

Rev. F. W. Vroom, M. A., (Kings) has been appointed professor of divinity in Kings.

James C. Shaw, B. A. (Dal.), with first rank honors in classics, and Governor-general's gold medalist, has been appointed classical master in the Pictou academy. He is a native of Stanhope, P. E. I., and a graduate of Prince of Wales college,

Concerning the School District and Teachers.

Since last issue the annual school meeting has been held in the various country districts throughout the Province, and, no doubt, the Inspectors have had in addition to their every-day routine endless difficulties and disputes to settle, regarding the validity and procedure of said meeting.

It would be interesting and perhaps instructive to take a peep over an Inspector's shoulder at some of the copies of the minutes sent to him, as by law required, after the meeting, and signed by the secretary and chairman. It may be here remarked that many districts entirely neglect to send the copy. And let it further be noticed that, though the fourteen days have expired within which impeachments of the proceedings of school meetings may be made (Sec. 99), they will continue to be made until the next annual meeting, even if no notice can be taken of them.

The law requires that the annual meeting, of which six full days' notice shall be given, shall be held on the second Thursday in October, at ten o'clock in the forenoon.

As to the notices: they must be signed by the trustees, or a majority of them, and not by the secretary. If they are not properly signed an appeal to the Inspector within the time above specified will invalidate the meeting, and a new one will be called. And let us pause here, to notice the procedure in the matter of calling another meeting. By Sec. 99, School Manual, a complaint in writing is made and inquired into by the Inspector, subject to an appeal within fourteen days after his decision to the Chief Superintendent, whose decision shall be final. If a new meeting is to be called, by Sec. 57, the Board of Education or the Chief Superintendent has power to direct the Inspector to call a general school meeting, which shall have power to transact any business that might have been done at the annual meeting. The Inspector will fill in the form of notice supplied him and sign it; but because he calls the meeting he is under no obligation, as some ratepayers think, to attend it in person. If that were the case, an Inspector would often have to be in three or four places at the same time. This, then, is the usual mode of procedure where a district has failed to hold its annual meeting. Six days' notice means six *full* days, not including the day of posting nor the day of meeting. The notices must be posted in at least two public places in the district. The time of meeting must not be varied or the day changed. It is on Thursday and cannot be postponed until some other day, except as the law provides; viz., a meeting may be *continued* until four o'clock on Thursday and adjourned until Friday and so continued; but no further adjournment shall take place. Objections have been made to school meetings because they have not opened at sharp ten o'clock. It is ten o'clock until it is eleven in common usage. Many trustees ask in the case of a general or special meeting to have it in the evening. While in many cases it would be a great convenience to hold it then it cannot lawfully be done.

After the meeting has been called to order a chairman must be selected, who must be a qualified voter. What is a qualified voter? Any one who is entitled to pay on real estate, personal property or income, or any one who pays taxes in excess of a poll, and has paid all the taxes that have been *imposed* upon him. Now, here comes up a much debated question. Is a man who actually possesses the property qualification at the time of the meeting, but who did not at the time the assessment was made, or from interested motives was not placed on the list, entitled to vote? It has been decided that his vote is good as he has paid all the taxes that have been imposed upon him. If a ratepayer who has not paid his taxes votes without being challenged his vote must be counted. If he takes the declaration and votes it must be accepted; but if he has taken a false declaration he is liable to a penalty. If a ratepayer refuses to take the declaration the chairman must not count his vote. C.

(To be continued.)

On the classification of the school depends in great measure the success of the teacher's work. It is a very grave mistake, therefore, to accept a faulty classification as a legacy from a predecessor, or to adopt a defective one in obedience to the wishes of prejudiced parents. Even a few pupils misplaced in classes too advanced for them, destroy the harmony of the school, are a hindrance to the progress of the classes and a continual annoyance to the teacher. Let the tests of the prescribed course of study, therefore, be vigorously applied at the beginning of the term, and pupils assigned to their respective grades without fear or favor according to the best judgment of the teacher. Fault-finding and adverse criticism there may be and probably will be, and generally in proportion to the necessity existing for a re-classification; but the teacher may safely trust to the results of the term's work to justify the step. With an excellent curriculum of studies prescribed by authority, published, and in the hands of teachers for over five years, it would seem that this advice should be unnecessary. Unfortunately, however, as our best teachers know to their grief, there are still many schools in which its provisions have been only partially adopted, and yet others in which scarcely any effective attempt has been made to classify in accordance with its requirements. Besides, incapable and time-serving teachers (?) frequently undo in a day what efficient and painstaking workers have accomplished in a term.

"To make hare-soup—first catch your hare." To educate children—first get them in the school-room. Statistics show that the average percentage of attendance in Nova Scotia is less than sixty. "The better the teacher the better the attendance," may be laid down as a rule. Pleasant, cheerful school-rooms, and lively and interesting school-work and exercises are mainly to be relied on to preserve regularity of attendance. Special means, however, may, with advantage, be employed at the beginning of the school term. In country districts the teacher should make the acquaintance of all the families containing children of school age, visiting them, as far as possible, in their own homes and explaining to the parents the loss resulting to the children and to the school from even occasional absences. Parents should be made to feel that the teacher notes and regrets every day's absence of their children. The faithful teacher will feel that a little or even a good deal of trouble taken, and effort expended, in securing regularity of attendance has its reward in the satisfactory progress of the pupils and the increased educational work accomplished.

R. MacLellan.

BOOK REVIEWS.

How to Study Botany is a paper, published in pamphlet form, read before the Hamilton Scientific Association, by I. J. W. Burgess, M. B., F. R. S. C. The paper is a valuable one to students of botany, is written in a clear and interesting style, and contains many valuable hints on this important study. Dr. Burgess is a gentleman who gives his leisure largely to the study of plants, and there is no more intelligent and enthusiastic botanist than he to be found in Canada.

The several chapters on Aspects of Education, by Oscar Browning, which appeared in *Science* during 1887-88, have been carefully revised by the author, and now appear among the monographs of the Industrial Education Association. In the opening chapter Mr. Browning asserts that since the revival of learning, secondary education has passed through three phases, humanism, realism and naturalism. He considers the history of each separately, that the system to which they had given rise may be the better understood. After tracing the many changes through which humanism, the study of classics, has passed, he says: "If humanism suffers now from a slight obscuration, due to its unfortunate attempt to claim too much mastery over the human mind; yet there is no fear of its being materially obscured, and the assistance which it may yet render the human race, in her search after the good, the beautiful, and the true, should command the sympathy and stimulate the efforts of every man to whom those objects are dear." He gives as the founders of the second phase, realism, or the study of things instead of words—Comenius, who devoted his whole life to the improvements of educational methods; John Milton, whose tractate on education is a most wonderful conception of a complete training; Pestalozzi, whose central idea was to train the mind through the senses; and Frœbel, who instituted the kindergarten system. In the chapter devoted to naturalism, he describes the views of the three great naturalists in education, Montaigue, Locke and Rousseau.

Shakespere's Henry V., with an introduction and notes, by K. Deighton, M. A. London, McMillan & Co., and New York. This book is clearly printed. The introduction gives the historical outlines with sufficient fulness, and the notes are suggestive rather than redundant.

Composition and Rhetoric, by William Williams, A. B., D. C. Heath & Co., publishers, Boston. Text-books on composition are legion; but this is one that departs from the usual course—giving much theory and little practice—by giving us little theory and much practice. It proceeds on the simple method of laying down a few principles and illustrating these with a great number and variety of exercises. The book is thoroughly practical in its character.

Studies in General History, by Mary D. Sheldon, accompanied by a Teacher's Manual, D. C. Heath & Co., Boston. In these two works we have a definite plan for studying history which the wide awake teacher will not be slow to avail himself of and apply to other fields than general history. The Student's Edition contains the materials and problems for independent study, and is put into the hands of the pupil. The Teacher's Manual contains the answers to these problems, with other matter that may serve to suggest better methods of teaching the important subject of history.

Town and Country School Buildings.—A collection of plans and designs for schools of various sizes, graded and ungraded, with descriptions of construction and sanitary arrangements, light, heat, and ventilation, by E. C. Gardner, architect, Chicago; E. L. Kellogg & Co., 4to, cloth, 141 pages, $2 50. Within a few years many towns have erected charming buildings for school purposes, and there is inquiry for plans setting in. To meet it this book has been prepared. The author is a well known architect and is also a writer of considerable skill. He shows how to build a handsome log school-house; how to use timber and plaster so as to make an attractive building; how to use shingles for the sides and make an elegant structure. These are all one-room buildings. Then come charming designs for two-room and three-room buildings. Some of the plans are truly most attractive and cannot but prove helpful to all communities that look for structures worthy of the valuable work to be done in the name of education. Besides the building plans there are suggestions as to lighting, heating and ventilation, that will be of great help. Too little attention has been paid to these points. Then too, the grounds, the outhouses, the fences, the walks, etc., are all discussed. It is probably the most elegant book yet published relating to school buildings, and cannot but give direction to the impulse to erect handsome structures.

The Song Century, a fine collection of songs suitable for schools, price 15 cents; and a **Primer of Memory Gems**, containing extracts from the best authors on many subjects: C. W. Bardeen, publisher, Syracuse, N. Y.

Elementary Classics: London, McMillan & Co., and New York. Four new volumes of this convenient and useful series have come to land. A "First Greek Grammar," by W. Gunion Rutherford, gives the more important lines of Greek accidence; "Easy Exercises in Greek Accidence," by H. G. Underhill, with vocabulary and exercises, is a neat and attractive little volume, designed to furnish matter for drill in the principles of the grammar; a "First Greek Reader," by F. H. Colson, containing stories and legends with notes, vocabularies, with a short syntactical guide; and a "Latin Reader," for the lower forms in schools, by H. J. Hardy, containing short extracts and stories from Latin authors, with vocabulary, furnish a series that should be very interesting and valuable to students.

BOOKS RECEIVED.

Compayre's History of Pedagogy. D. C. Heath & Co., publishers, Boston.

Elementary Statics. London: MacMillan & Co., and New York.

Outlines of English History. London: Hamilton Adams & Co.

EXCHANGES.

The *Century* (*Century* Publishing Co., New York,) for November, contains opening chapters of an illustrated serial story, "The Romance of Dollard," which introduces us to early Canadian life. The historian, Francis Parkman, contributes the preface, and the story promises to be unusually interesting to Canadian readers....A recent number of *Science* (*Science* Publishing Co., New York,) contains a map and estimates of the proposed Siberian Railway, from St. Petersburg to Vladivostok, on the Pacific,—distance 6,000 miles....The recent articles in *Garden and Forest* (D. R. Munro, publisher, New York,) on "Ferns and their Cultivation," with other articles appropriate to each month, make this magazine indispensable to those who would improve their gardens and grounds....*Common School Education* (W. A. Mowry, publisher, Boston,) is a neat and beautifully printed magazine, well adapted to the needs of primary teachers....*St. Nicholas* (*Century* Co., publishers, New York,) for November, contains a finely illustrated and instructive article on the "Queen's Navy."....*Popular Science Monthly* (D. Appleton & Co., New York,) for November, has an interesting table of contents, among which are "Sun Power and Growth," and an article on "Problematical Organs of Sense," by Sir John Lubbock....The *Illustrated London News* (American edition, New York,) is becoming no less celebrated for its literary than for its illustrated articles. What a delight it is to read every week "Our Note-Book," by James Payn, and what a delicious piece of nature description was "Blackberrying," in the number for October 27th. * * * "Children never grow old. * * * All the brand new educational systems have left the spirit of childhood unaffected,—as you may assure yourself if you will follow in the steps of children when they go a-blackberrying." The *Bookmart* (published at Pittsburg, Pa.,) has an article in its October number on "Early Printing in Canada," which is interesting to the students of our literature. The *Bookmart* is an admirable literary magazine. The following extract from the New York *Critic* may point out the reason of its excellence: "Mr. Halkett Lord, editor of the *Bookmart*, is a step-son of the late Henry Mayhew, the first editor of *Punch*. Mr. Lord is a veritable book-worm, and deeply learned in English lore. Though a Britisher to the backbone, he prefers America as a home and working place."....*Treasure Trove* (E. L. Kellogg & Co., educational publishers, N.Y.) is a bright monthly magazine that is interesting in the family and school....The *Swiss Cross* (*Science* Publishing Co., New York,) for November, contains many valuable and interesting articles for young naturalists.

Our college exchanges are again at hand, and some have donned a new dress. The Sackville *Argosy*, always neat and readable, is more attractive with its new title page. ....The Dalhousie *Gazette* has also a new and handsome title page and an interesting table of contents. The issue of such a creditable college journal, once a fortnight, speaks well for its staff of editors....The N. B. *University Monthly* has just reached us and promises to keep up its record as a live college journal....The *Fordham Monthly* (N. Y.,) has a well written sketch on the home of "Evangeline." The handsomely printed pages of the *Monthly* and its well written articles make it a welcome visitor always.

N. B. Normal School Entrance Examination, September, 1888.

USEFUL KNOWLEDGE. *Time*, 1 *hr.*

1. Make a list of the principal forest trees of New Brunswick, and name the industries connected with each.

2. Write what you know of the useful minerals of New Brunswick, in the following form, viz.:

Mineral.	Where found.	Uses.

3. Name any five wild animals of New Brunswick, classify them, and give the characteristics of the family to which each belongs. Give answer in tabular form, if preferred.

4. Explain the manner of growth in an animal, a plant, and a mineral.

5. Name the rules of health to be observed in respect to (*a*) food, (*b*) clothing, (*c*) exercise, (*d*) rest, (*e*) ventilation, (*f*) the use of alcohol in any form.

N. B. Any four of the above taken as a full paper.

LANGUAGE *Time*, 1 *hr.* 15 *min.*

1. Who is your favorite author? What books have you read lately? Give your opinion of one of them.

2.

The boast of heraldry, the pomp of power,
  And all that beauty, all that wealth e'er gave,
Await alike the inevitable hour,
  The paths of glory lead but to the grave.

(*a*) Give the thought of this passage in your own words. (*b*) What is the subject of "await?" (*c*) Who wrote the poem from which it is taken, and what gives this stanza a peculiar historic interest?

3. Write a letter to your clergyman, asking him to give you a certificate of character, to be filed at the normal school.

4.

For *who* to dumb *forgetfulness* a *prey*
This *pleasing*, anxious *being* e'er resigned,
Left the warm *precincts* of the cheerful day
Nor cast one longing *lingering* look *behind.*

(*a*) Give the full grammatical analysis of the stanza. (*b*) Parse the italicized words.

5. Write five irregular plurals, five feminine forms which are made by using a different word, the comparative and superlative of five irregular adjectives, the past tenses and past participles of five irregular verbs.

HISTORY. *Time*, 1 *hr.* 30 *min.*

1. Give a brief description of the early settlements in New Brunswick.

2. Name any events in the history of Canada or of New Brunswick which occurred during the reign of Henry VII., Charles I., Oliver Cromwell, George III., and Victoria, respectively.

3. Write brief biographical notes, giving dates when you can, on any three of the following personages in English history, viz.:—Suetonius, Simon de Montfort, Cardinal Wolsey, John Hampden, the Duke of Marlborough, William Pitt, W. E. Gladstone; and of any three of the following personages in Canadian history, viz.:—Jacques Cartier, Sir William Alexander, Count Frontenac, Sir John Harvey, L. A. Wilmot, and Sir John A. Macdonald.

4. Describe the plan of operations in America at the close of the Seven Years' War, and illustrate your answer by a rough sketch of the ground over which they extended, locating battle grounds.

5. Make a list of the sovereigns of the Tudor line, and describe briefly the reign of any one of them.

6. What attempt has been made during the past year to settle the fishery dispute between Canada and the United States, and what is the present condition of this question?

7. Describe the law-making power in the several Provinces of the Dominion.

N. B.—Any five questions, including the fourth, taken as a full paper.

GEOGRAPHY. *Time*, 1 *hr.* 30 *min.*

1. Draw an outline map of New Brunswick and locate on it the chief rivers, towns, lines of railway, coast waters, capes, islands, and the principal industries of the Province.

2. Contrast New Brunswick and Nova Scotia in respect to (*a*) form, (*b*) area, (*c*) length of coast line, (*d*) number and length of navigable rivers, (*e*) physical features, (*f*) number and location of chief towns, (*g*) exports and imports.

3. Write geographical notes on the following, viz.:—Bras d'Or, St. Louis, Antwerp, The Isle of Wight, The Catskills, Canterbury, Luzern.

4. Give a brief description of the mountain ranges of North America.

5 Make a list of the geographical terms applied to rivers, or parts of rivers, and explain each. On what does the length, volume, and rapidity of a river depend?

6. Latitude and Longitude: (*a*) What they are, (*b*) how measured, (*c*) from what points and in what directions measured, (*d*) state how to find both from a map, (*e*) the connection between latitude and animal and plant life, (*f*) between longitude and time. State the advantages of the twenty-four hour system of reckoning time.

N. B.—Any five questions, including the first, taken as a full paper.

MENTAL ARITHMETIC. *Time*, 10 *min.*

1. 26 lbs. at 28 cts. per lb.? ....*Ans.*
2 $1\frac{3}{4}$ yards at 19 cts.?........ ....*Ans.*
3. Premium on Insurance of $1,800 at $1\frac{1}{4}$ per cent? ....*Ans.*
4. $12\frac{1}{2}$ tons of hay at $12.50?...............*Ans.*
5. Interest of $72 fcr $2\frac{1}{2}$ years at 8 per cent? *Ans.*
6. $\frac{1}{6}+\frac{1}{8}+\frac{1}{12}=$?........................ ....*Ans.*
7. How many feet in a mile? ....*Ans.*
8. Discount on a bill of $12 50 at 5 per cent? *Ans.*

N. B.—Answers to be placed on this paper.

INDUSTRIAL DRAWING. *Time* 1 *hr.*

1. What do you understand by the terms *free-hand drawing, geometrical drawing and object drawing?*

2. Compare and contrast the following, pointing out wherein they agree and wherein they differ:—

(*a*) A straight line, a perpendicular and a vertical line.

(*b*) A compound curve and a reversed curve.

(*c*) An ellipse and an oval.

(*d*) A square and a rectangle.

3. Draw from memory, without the aid of ruler, compasses or other mechanical help, *two* of the following, making each drawing not less than two inches wide:—

(*a*) A rosette composed of simple curves symmetrically placed in a square.

(*b*) A vase outlined by compound reversed curves.

(*c*) A design composed of conventionalized forms.

ARITHMETIC. *Time*, 1 *hr.* 30 *min.*

1.

	1877	1887
(*a*) Number of Schools in New Brunswick, ...	1375	1504
(*b*) Number of Teachers,.........	1350	1565
(*c*) Pupils at school,.............	67,803	68,583
(*d*) Prov. Expenditure for Education, ...	$151,554	$157,368

Find the percentages of increase during the ten years.

2. A man has a field 48 rods long and 240 yards wide. From one corner he sells a lot 16 rods square. What is the value of the remainder at $108 per acre?

3 A man buys $\frac{5}{64}$ of a ship for $2500. He sells $\frac{3}{10}$ of his share for $1000. Has he gained or lost on the part sold, and how much?

4. A is a merchant, B. one of his customers. The following transactions take place, viz.: Jan. 1st, '88, B. buys goods to the amount of $27 60; Feb. 12, '88, $13.86; March 23, $54 20 March 1st, '88, B. pays cash $25; April 10th, 87 bushels of oats worth 47 cts. per bushel. Show in proper form how B.'s account stands on A.'s books on May 1st, 1888, and make out a bill for the balance.

5. A steamship crosses the Atlantic, from Queenstown to Sandy Hook, in 5 days, $23\frac{1}{2}$ hours. The distance is 3,400 miles. Find her average rate per hour.

6. From $\frac{5}{8}$ of a mile take .625 of $\frac{1}{4}$ of a mile, and express the difference as a decimal of $\frac{1}{2}$ a mile.

7. If I pay $2.80 for $266\frac{2}{3}$ feet of boards, what is the price per thousand feet?

8. Find the interest of $265.80 from Jan. 13th, '88, to Aug. 20th, '88, at 7 per cent., allowing three days grace. (Do not reckon 30 days=1 month).

9. Define the terms factor, quotient, multiple, ratio, interest, commission.

N. B.—Any seven of the above taken as a full paper.

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◆

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BECAUSE it is printing those remarkable articles on "Siberia and the Exile System," by Geo. Kennan, which are attracting universal attention, and are being reprinted in hundreds of foreign newspapers, but are not allowed to enter Russia. The "Chicago Tribune" says that "no other magazine articles printed in the English language just now touch upon a subject which so vitally interests all thoughtful people in Europe and America and Asia." They are "as judicial as the opinion of a Supreme Court tribunal,—as thrilling as the most sensational drama."

BECAUSE during 1889 THE CENTURY is to have a series of engravings of the greatest pictures of the old Italian masters, made by Timothy Cold, the leading wood-engraver of the world, who has spent four years in Italy on this work; a series of "Strange True Stories of Louisiana," by George W. Cable; occasional richly illustrated papers describing the current International Sunday-School Lessons; interesting papers on Ireland, and a series of humorous and pathetic Irish-American stories; a striking illustrated novelette, "The Romance of Dollard," by a new writer, and other novelettes to be announced later; supplemental war papers, untechnical and descriptive of special incidents; "Pictures of the Far West, by Mary Hallock Foote, etc., etc. We have not space here to announce all the new features. Let us send you (free) our "Catalogue of Special Publications," with original illustrations, containing full prospectus, special offer of back numbers to beginning of the Siberian papers, etc. The November number, which begins the new volume, is for sale everywhere after Nov. 1st. THE CENTURY costs 35 cents a number; $4.00 a year. Address THE CENTURY CO. 33 East 17th Street, New York.

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AMERICA.

"Little Saint Elizabeth," by Mrs. Burnett, author of "Little Lord Fauntleroy"; "The Routine of the Republic; How the Government is Carried on"; "College Athletics"; "Amateur Photography"; "Boys and the National Guard"; "The Girl's Crusade"; Indian Stories, School Stories, etc. "The Bells of St. Anne," a serial about Canada. South American stories—"A Railroad in the Clouds"; "Indians of the Amazon," by Mrs. Frank R. Stockton, etc.

EUROPE.

"Life in Norway," by H. H. Boyesen; "Holland and the Dutch," by Mrs. Mary Mapes Dodge; "The Queen's Navy," by Lieut. F. H. Smith, R. N.; "The Winchester School"; "English Railway Trains"; "Ferdinand de Lesseps"; German, Italian (art) and Russian papers, etc., etc.

ASIA.

Yan Phou Lee writes of "Boys and Girls in China," and there is a description of "Some of John Chinaman's Inventions." Mrs. Holman Hunt describes "Home Life in the East"; papers on Siam, Japan and other countries.

AFRICA.

"The White Pasha," by Noah Brooks, a sketch of Henry M. Stanley; "How an American Family Lived in Egypt"; "Sailor-Boy Dromios," a story of the siege of Alexandria.

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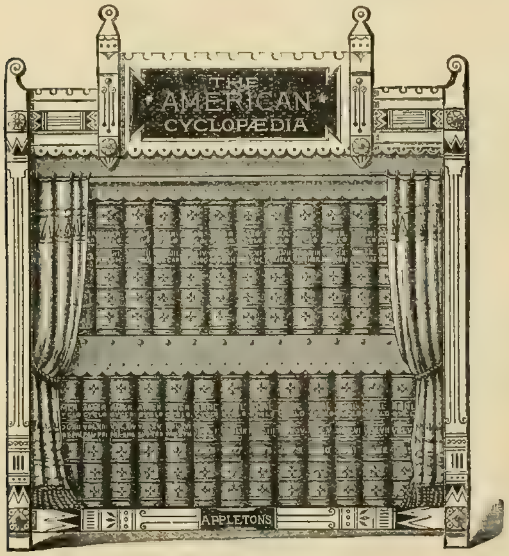

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Devoted to Advanced Methods of Education and General Culture.

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G. U. HAY, Ph. B., Editor for New Brunswick.

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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

WE take this opportunity to wish all our readers A VERY HAPPY CHRISTMAS AND A PROSPEROUS NEW YEAR.

HERE are a few of the words which accompany subscriptions to the REVIEW. They are from teachers whose good opinion we value and whose encouraging words lighten toil:

"I enclose one dollar for the EDUCATIONAL REVIEW, Vol II. I trust your subscription list is prosperous in proportion to the sterling merits of your paper."

"I hope you will pardon my negligence in not remitting sooner. I am very thankful for the EDUCATIONAL REVIEW, and begin to think I cannot get along without it."

From the normal school, Shiznoka, comes the following, which shows that our far-off fellow-workers in Japan know how to appreciate a good educational journal:

"I receive the EDUCATIONAL REVIEW, which I read all over with much delight. I have always been happy to read it Many thanks to you for all this."

We could multiply these words of good-will, but it is unnecessary. We believe that every constant and intelligent reader of the REVIEW finds help from its pages. We desire to make it even more valuable for the coming year. Will our friends help to extend its influence? Introduce it to some friend who is not already a subscriber, or send us the name of one who may be a subscriber, and we will be glad to send a sample copy.

HERE is the testimony of an intelligent reader of the REVIEW concerning the merits of *Ledum latifolium* (Labrador tea): "I have taken to it, and I would not return to the Chinese drug on any consideration. I sleep better and am generally improved by its use." Will our correspondent favor the readers of the REVIEW with his method of preparing the tea?

THE superintendent of education and the inspectors of schools for New Brunswick met recently in Fredericton to revise the course of instruction for public schools. The changes made will, it is expected, receive the sanction of the Board of Education at its next meeting. We shall, if ready, publish this revised course in our January number.

THE Board of Education for New Brunswick has been pleased to make the following orders:

1. That instruction be given in the public schools on *the effects of alcoholic stimulants on the human system*, and that Palmer's *Temperance Teaching of Science* be prescribed as the text-book on the subject.

2. That *Les Grandes Inventions Modernes* be prescribed for use in the French-English schools, to alternate with Royal Reader No. IV.

3. That the texts of the Berlitz Schools of Languages may be used, with the sanction of trustees, in schools taught by teachers having a competent knowledge of modern languages.

WM. CROCKET, *Chief Supt. Education*.

We notice in the provincial press indications of a general movement in our academies and advanced schools for the formation of local museums in connection with these institutions. This is a promising feature. The guiding principle in the formation of these should be collection and representation of the complete natural history of the particular locality. Foreign articles of scientific, historic or curious interest should, of course, always be thankfully received. But *the* effort should be made in the direction of the study and systematic illustration of the world of nature in our neighborhood first and foremost. We should like to have reports from academies, high schools and other schools which have already made attempts in this direction, and from those who propose to make attempts. We shall be glad to note the progress made in this department by December of the next year.

The third session of the Nova Scotia Summer Science School will be held in one of the most interesting portions of the province—Parrsboro. Now is the time to commence preparing to utilize the advantages offered by such an institution.

Over 150 students are attending the Provincial Normal School at Truro. Each year the general scholarship of the students attending is of a higher order. Principal Calkins' lately published text-book on education is found to be an invaluable aid to the student teacher as to the teaching teacher.

Mr. Geo. R. Parkin, of Fredericton, has contributed an able and scholarly article in the December *Century* on the "Reorganization of the British Empire." This, with a series of letters to the New York *Nation*, in which Mr. Parkin traces the growth of the federation scheme, shows an intelligent view of the question from a British as well as a Canadian standpoint.

We have much pleasure in directing the attention of teachers throughout New Brunswick to the announcement made in another column by the Ladies' Auxiliary Committee of the S. P. C. A. This committee has for years been doing a very useful work in disseminating literature, and by other means to secure a greater interest among children in regard to the lower animals. They realize that to make these efforts successful and lead children to be kind to the lower animals, the teachers' co-operation should be secured. We hope that the efforts of these energetic and humane ladies will be appreciated by a general response to the call for essays.

Professor Lawson, Ph. D., LL. D., ex-President of the Royal Society of Canada, has, as Secretary for Agriculture for Nova Scotia, reduced the reporting of crops to an exact science. From his exhaustive report published last month, in which he sums up crop statistics from every county of the province, we cull the following notes: Hay, 97 per cent. of the average, but, owing to superior pasturage, will be equivalent to something above the average; oats, 104 per cent.; wheat, *below* the average; buckwheat, *above;* peas and beans, *below;* Indian corn, 60; turnips, *above;* potato, slightly *below.* Apple culture is extending in the province. The crop, on the whole, is above the average, the best varieties being the most successful.

The *Maritime Medical News,* a bi-monthly journal of medicine, surgery and obstetrics. We have just received the first number of this promising journal. While published in Halifax, it has a staff of editors representing the three Atlantic provinces of Canada, in this respect following the example of the Review. Professor D. A. Campbell, M. D., of the Medical Faculty Dalhousie College, and Dr. Morrow, Pleasant street, Halifax, represent Nova Scotia; J. W. Daniel, M. D., M. R. C. S., and L. C. Allison, M. B., of St. John, represent New Brunswick; and James McLeod, M. D., Charlottetown, represents Prince Edward Island. The present number contains the annual address of Dr. P. R. Inches, President of the New Brunswick Medical Society; of William McKay, M.D., M. P. P., President of the Nova Scotia Medical Society, and papers by other eminent medical men, in addition to editorial articles and notes. The diffusion of native medical literature by this journal must do much to advance the science of healing and general sanitation in our provinces.

We have received a copy of the annual University lecture of McGill University, for 1888-89, by Principal Sir J. W. Dawson; also from Ray Greene Huling, of New Bedford, Mass., reports of High, Grammar and Primary School Education in Massachusetts, with the Proceedings of the N. E. Teachers' Association; and from Prof. Macoun, Dominion botanist, a Catalogue of Canadian Plants, Part IV.—Endogens.

The Montreal *Witness* offers a number of valuable prizes for competition in the schools of Canada. First, there is a Dominion prize, worth $125; secondly, a prize for each province, and thirdly, a prize for each county and to each of twenty-three cities. The subject given is the best true story of adventure, the scene of which is laid in the county or city in which each competitor resides. The stories must be sent to the *Witness* office before the 28th of February next.

DR. INCH AT CHARLOTTETOWN.

We had lately the very great pleasure of a visit to Charlottetown of the President of Mount Allison University. He came in the interest of the education schemes of the Methodist Church in Canada. Besides speaking twice at Charlottetown, he addressed audiences in other parts of the province. It has rarely been our good fortune to listen to a speaker more sensible, manly and moderate. It was very refreshing to hear Dr. Inch, with so much force and fervor, plead for the highest and most thorough intellectual preparation of candidates for the ministry. The time has gone by, said he, when an illiterate clergy could be tolerated. The clergyman must be able to keep abreast of the thought of the day—be able, as a cultured man, to speak to cultured men, and as a champion of the truth to meet its enemies upon their own ground; and should he determine to proceed, as a missionary, to distant lands, it is equally incumbent upon him to go forth armed at all points to do battle with error and superstition, whether they be Buddhist, Brahminic or Mohammedan; and as the state takes no cognizance of religious instruction, he claimed the support of his audience, in behalf of institutions of learning, which, while providing an excellent secular education for the youth of the Methodist Church, did so under religious influences, and with a view to the establishment of their minds in the faith.

We can only give a faint idea of this admirable address, but we trust the results were good and encouraging. At any rate, we can assure Dr. Inch that, as the advocate of a thorough, broad and enlightened system of higher education, he will not only have the good wishes and assistance of his own people, but the hearty sympathy of the friends of sound education in all other denominations.

EDUCATIONAL OPINION.

HALIFAX TEACHERS.—I have referred to the zeal manifested by our teachers in their noble calling. It may be interesting to mention a few facts bearing on this subject. In 1887, a summer school of science was established for the special purpose of giving such instruction as might be needed in reference to the lessons on nature, as prescribed in the course of study. The second session was held in Pictou last summer, and was attended by 67 students, of whom thirteen were from this city, viz.: Mr. W. T. Kennedy, Miss J. M. Creighton, Miss A. M. Cunningham, Miss A.J. Mitchell, Miss J. M. Wiswell, Mr. W. H. Waddell, Miss C. J. Miller, Miss Maude Bowder, Mr. L. A. McKenna, Miss H. L. Flowers, Miss Mary Brims, Miss M. A. S. Holloway, Miss Mary Donohoe. They voluntarily gave up a large part of their holidays, studied faithfully in advance and during the sessions, incurring, besides, large expenses for fees, travelling, board and books—all for the benefit of their pupils. The majority of those named and several others were also in attendance at the Interprovincial Convention of teachers at St. John—learning from the celebrated educationists: Dr. Fitch, H. M., Chief Inspector of training schools, England; Col. and Mrs. Parker, of Illinois; Sir William Dawson and others. I might also refer to the fact that no less than thirty-one teachers of the city were enrolled as students in the Art school. They wished in the first place to acquire such a ready use of the pencil as would enable them to illustrate on the blackboard any subject which could be made more intelligible by the pictorial art. In the second place they recognized the fact that drawing is gradually beginning to take rank with the essentials of a common school education—that all manual training must be preceded by and founded on a thorough knowledge of the principle of freehand and design—and that all teachers retaining a satisfactory rank must obtain a mastery of this subject.—*Supervisor McKay in his annual report.*

From very many of the leading school sections of Nova Scotia, we get expression of opinion favoring a *one* term system. The term to begin about the last week of August and end about the first week in July. The supervisor of the Halifax schools recommends such a system in his annual report as the best for the schools of Halifax.

THE DRIFT.

We ask our school teachers and officers to carefully weigh the import of the following presentation of present educational development, which we quote from the report of one of the most practical educationists of Canada, Supervisor McKay of Halifax. For the unprogressive, it is the handwriting on the wall:

> In my reports to the board for three or four years past I devoted much attention to the vital educational questions of the day as they presented themselves to my judgment. Some propositions, which at that time were deemed debatable, are now regarded as settled. No man with any reputation as an educationist would dispute the absolute necessity for trained teachers or for free and properly equipped high schools. All are willing to admit that drawing, singing, calesthenics and nature lessons should form part of the exercises of every well conducted school; that co-education, almost universal in America and fast gaining ground in England, is a success; that some considerable modification of our curricula, looking towards the introduction of manual training and kindergarten principles, are necessary, and must soon come. But how can anything new be admitted into a course of study generally regarded as already overcrowded with subjects, each as important as those seeking admission? Well, in the first place, the course of study seems to be more formidable than it is in

reality, on account of the fullness with which the requirements in the various topics are described. Again, increased practice in the teaching of nature lessons, of drawing and other new subjects, will eventually make them the most popular and the easiest on the programme. Much of the feeling of over-pressure experienced at present arises from the want of interest, which is the result of defective methods of presentation. In a primitive form of society man could afford to satisfy his few wants in spite of energies misdirected and wasted by crude machinery and unskilled labor. But as society became more complex and social demands multiplied, a proper economy of productive forces became the prime necessity. Just so in educational matters. The many-sided culture demanded by modern life renders necessary the wisest economy of educational energy. In the words of Dr. Eliot, our school programmes must be shortened and enriched. As to how this can be done, the most authoritative deliverance comes from the reports of two committees appointed in England—one in 1886 by the English parliament, the other in 1887 by the London school-board. These committees, including the most distinguished educationists of the country, after an exhaustive investigation, have recently reported. Acting on a motion of the Hon. Senator Power, the board sent for these valuable reports, and they have just come to hand. As offering a solution of difficulties, and for the information of this board, I beg to present, in a condensed form, those recommendations in the reports which are most suited to the circumstances of a new country not unduly trammelled by the traditions of the past.

They recommend:—

1. That the method of kindergarten teaching be developed for senior scholars throughout the schools, so as to supply a graduated course of manual training in connection with science teaching and object lessons.

2. That the teaching of all subjects be accompanied, where possible, by experiments and ocular demonstration, and that the necessary apparatus be supplied to the schools.

3. That the board encourage modelling in clay in all departments of schools, both in connection with drawing as a training of the artistic faculties, and for the illustration of the teaching of geography and other subjects.

4. That all manual instructions should be given in connection with the scientific principles underlying the work, and with suitable drawing and geometry.

5. That greater attention be paid to the teaching of mechanics, and that models for illustrating the instruction be supplied.

6. That instruction in practical geometry be included in the teaching of drawing, and that mechanical drawing to scale with actual measurements be encouraged in all boys' departments.

7. That the time now given for dictation be reduced, and that in substitution for the part omitted in the lower classes the reproduction by children in their own words of passages read out to them, and in the senior classes original composition be usually taken.

8. That the teaching of reading should be specially directed to give children an interest in books, and to encourage them to read for their own pleasure, and that reading books should be used for imparting a knowledge of geography, history, social economy and facts of common life to all children who may not be able to take such subjects for examination.

9. That in order to allow time for experimental teaching and manual work, the time now given to spelling, parsing and grammar generally be reduced.

10. That principals of all schools be required to forward each year, for the approval of the school committee, a scheme of object lessons and a copy of the time-tables proposed to be used.

11. That teachers be informed that the board do not pay so much attention to the percentages obtained at written examinations as to the general tone and character of the school work as set out in the supervisors' reports.

12. That the play grounds attached to schools be used for the formation of clubs for hardy sports, gymnastic exercises and drill.

13. That the question of organized physical education out of school hours receive careful consideration.

14. That with a view to secure the improvement of kindergarten in the schools of the board, the education departments be required to grant certificates to teachers after examination, showing that they have been trained in the principles and sound practices of kindergarten.

Acting in the spirit of these recommendations would imply:

1. A great deal of intelligent and interesting reading in all the classes, for the purpose of securing readiness in word, recognition, command of language and fluency of expression. Opposed to this in the younger classes would be the mischievous habit of continually interrupting the reader and harrassing him with trivial explanations. Minute accuracy is neither natural nor desirable in very young children. A correct general understanding is all that is necessary at that stage. Let the teacher be a good reader, and read much to her pupils for their imitation.

2. But little attention to spelling as a specific exercise until the pupil could read fairly well. After they have spent three or four years in becoming familiar with the forms of words by much reading and by simple exercise in composition, spelling could then be taught thoroughly at the least cost, thus saving much time for other important work.

3. That arithmetic should be practical, dealing with matters of every-day life. Arithmetical puzzles should be postponed until they could be solved by algebra. There are practical difficulties enough for the purposes of mental gymnastics without creating artificial ones. Actual weights and measures, ocular demonstration and experiment would elucidate principles and render the subject less obstruse. Here again time could be saved.

4. That but little attention be given to grammar or parsing until the eighth grade be reached. The mental discipline can be supplied in more useful ways, while the practical uses can be acquired by exercises in composition and letter-writing.

5. That geography be combined as much as possible with object lessons, and be taught from maps made by the teachers and pupils. Modelling in clay is required for the best teaching of geography.

6. That interesting biographical sketches should form the beginnings of history teaching.

7. That instrumental and geometrical drawing, for the purposes of training the eye and hand to accuracy, should be continually associated with free-hand drawing. Writing is very much improved by the teaching of drawing.

8. That in teaching nature lessons pupils should be made to base their conclusions on what they observe, not on what they are told.

9. That singing should be obligatory in all schools. It lends brightness to school hours and gives a taste for a higher kind of recreation in subsequent life.

10. That teachers should be teachers and not lesson hearers.

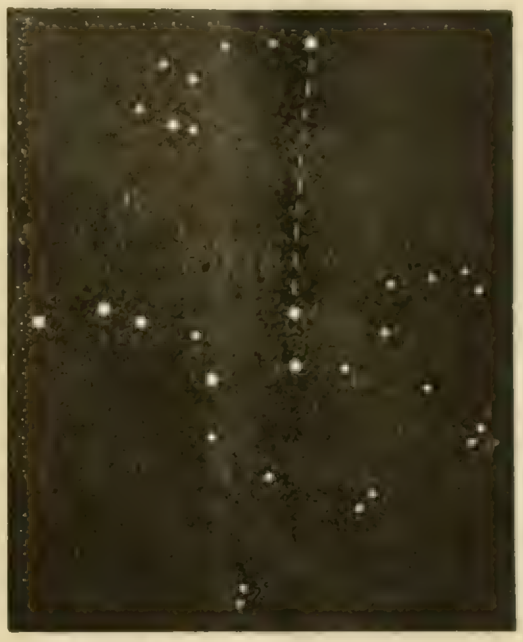
PUBLIC EDUCATION IN ENGLAND.

The tone of the debate on the education estimates lately was eminently satisfactory. All who took part in it seemed to recognize that our system of elementary education is still very far from perfection. Sir John Lubbock evidently expressed the general feeling of the House of Commons when he complained that "the great faults of the present system were that it was too bookish and too dry." Mr. Mundella had a good deal to say—and said it well—on the necessity of the education of children being carried on to a much more advanced stage than that at which it now usually stops. "So long as the school life of the child was so short and limited," he said, "it was no use, in his judgment, talking about improved methods or an improved curriculum. So long as a child could enter a factory as a half-timer at ten years of age, or, as was the case in 8,000 or 10,000 parishes in England, children were allowed to leave school after passing Standard IV., it did not matter what their curriculum was, or what their methods were, they could have no good results. It was impossible for them to force a number of compulsory subjects into a child who was to follow the plough-tail before he was eleven years of age. In the counties around London it was found that children left school after passing Standard IV., which they generally did about ten. There could not be a greater waste of money than to educate a child up to ten years of age at the expense of the state, and then turn him out into the world, the eventual result being that by the time he had reached thirteen he had forgotten everything he had learnt." After quoting from the report of Mr. Matthew Arnold, as to the curriculum in force in Germany, showing that in Hamburg, for instance, there are thirteen obligatory subjects taught in the elementary schools, English being one of the subjects, Mr. Mundella pointed out that in Prussia no child leaves school till he is fourteen. Even after he leaves school, unless he can satisfy the school authorities, he must attend the continuation schools until he reaches sixteen or seventeen years of age.—*Nature.*

I often think that if I were a foreigner and had to set about learning English I should go mad. I honestly say I cannot conceive how it is that he learns to pronounce English, when I take into account the total absence of rule, method and system, and all the auxilliaries that people usually get when they have to acquire something difficult of attainment. There is much that may be done with advantage—in the reform of spelling our language. It is not in my power under present circumstances, to offer to give time to the undertaking which I recommend and in which I should gladly have found myself able to join.—*Rt. Hon. W. E. Gladstone, Ex-Prime Minister of England.*

AMONG THE CONSTELLATIONS.

No. VIII.—The Northern Bears.



The sad and solemn night
Hath yet her multitude of cheerful fires;
The glorious host of light
Walk the dark hemispheres till she retires;
All through her silent watches, gliding slow,
Her constellations come, and climb the heavens and go.
Bryant—Hymn to the North Star.

Early in the evening this month *Ursa Minor* and *Ursa Major* can be seen, when it is clear, in the position given above. The tail and about one-half of the body of the Great Bear is the familiar "Dipper," or "plough." The dotted line from the two stars, called the pointers, lead up to the North Pole Star, which is at the top of our map. This star is called Polaris, or *Alpha Ursæ Minoris.* The latter name means Alpha of the Little Bear. Alpha is the name of the first letter of the Greek alphabet, and is therefore generally applied to the brightest star in the constellation. *Beta Ursæ Minoris,* the next brightest, is at the lower end of the parallelogram, and is also known by the Arabian name Kocab. The outline of this constellation is somewhat like the "Dipper" in the Great Bear, and consists of seven stars. The Little Bear is pinned to the sky by the North Pole Star at the tip of her tail. The tail is outlined by the three stars, and the rectangle of four stars forms the hinder half of the body. She is springing in the direction of the tail of the Great Bear. The two pointer stars are in the middle of the body of the latter. The head is over the stars at the right side of the map, and three of the paws are indicated by the three lower couples of stars. The paws are below the horizon until later in the evening, when the Great Bear will be seen climbing up the north-eastern sky. In one hour these bears swing around the North Pole Star fifteen degrees, or the twenty-fourth part of a circle—a very noticeable displacement. From six o'clock to midnight they swing around ninety degrees, or the quarter of a circle. But the skies really stand still. It is the great world, which rolls around from west to east, and its axis of revolution passing through its South and North Poles, when produced into the infinitude of northern space, passes nearly through the North Star, Polaris. The true pole of the heavens is more than two moon-breadths from this star. In 200 years it will be nearer still, as near as it ever will be—about one moon-breadth, or half a degree. So the North Pole Star itself describes a small circle. The true pole of the heavens is really moving with extreme slowness in a large circle with a radius of 23° 28′ around a point in the Dragon's Head, which is called the Pole of the Ecliptic. In 12,934 years the North Pole of the sky will be a little further from our present North Star than the horizon now is, viz., 46° 56′. In a Platonic year—25,868 of our years—it will return again to its present position. At six hours and ten minutes in the evening and about the same hour in the morning of New Year's day the North Star is exactly on opposite sides of the true North Pole. Taking the average of its altitudes at these two hours we find the altitude of the true North Pole, which is the true latitude of the place where the observation is made. Another experiment which should be tried is the following: Mark by some object in the field or country to the north of you, where a bright or known star of the Great Bear is seen; time its arrival at the same point next night, and so on for a number of nights. Each night the star comes up to the mark nearly four minutes earlier than the preceding; or, speaking more accurately, the star makes an exact revolution in 23h. 56′ 4″ nearly—3′ 56″ less than the day of twenty-four hours. The day of twenty-four hours is measured by the sun, and is hence called the *solar* day. The time in which the stars make a complete revolution is called a *sidereal* day—from *sidus*, a star. As it is the earth which turns, it then follows that the earth makes an exact revolution in 23h. 56′ 4″. In our twenty-four hour day the earth makes a complete revolution and a little more—nearly four minutes more—so that the sun may be our midday mark. The reason of this is that, while the earth makes a complete revolution in 23h. 56′ 4″ from west to east, the sun apparently moves also about twice its own breadth from west to east in the sky. The earth has to turn for three minutes and fifty-six seconds longer in order to catch up to the sun. Twice the sun's breadth is about one degree. In about 365 days the sun would complete the circuit of the sky. This apparent motion of the sun in the sky is really due to the motion of the earth around the sun, the sun being always seen projected against the constellation beyond it from the point of view of the earth. The gain of three minutes and fifty-six seconds nearly each night by our marked star would give in one year—365 days—a gain of twenty-four hours. Each night, then, we will see the Great Bear climbing up easterly a little higher than at the corresponding time of the previous night.

In our next issue we shall give a popular account of some of the stars in these constellations.

SCIENTIFIC NOTES.

The solar eclipse on New Year's day will not be visible in the Atlantic provinces.

There will be a partial lunar eclipse on January 16th, commencing in the Atlantic provinces after 10 p. m. Middle of eclipse, about 1 a. m., 17th; end, about 4 a. m.

Venus is about two hours and a half after the sun; Mars over three hours after; Jupiter nearly an hour ahead, during the latter portion of December.

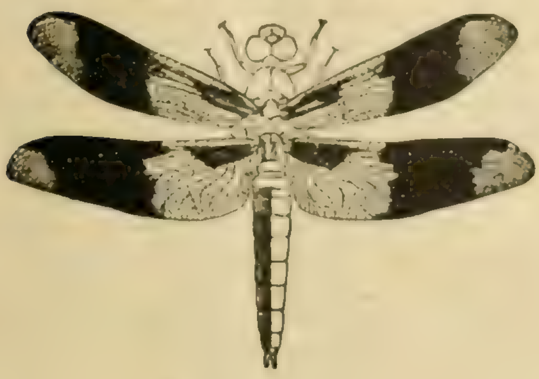
The great Lick telescope is reported to be making new discoveries as to the character of the surface of the moon and of some of the planets.

Herschel's supposed discovery of active volcanoes on the surface of the moon, is now thought to be the reflection of sunlight from some large mirror-like surface. Prof. Holden, of the Lick Observatory, observed for a short time, July 15th, a brilliant speck of light near the southern extremity of the lunar Alps. Other observations of a similar kind have been recorded.

English spelling simply disgraces civilization. We every now and then assume a theatric attitude and explain to the world that we are a practical people; that we don't pretend to do any great feats in the airy realms of imagination; but if you want to realize what it is we are, set us a practical problem, etc. Here is a practical problem at the very hand of the Anglo-Saxon race and has so lain for 1,000 years. Let them reform their spelling. Within 300 years the gay Italian, the serious Spaniard, and the phlegmatic Dutchman have taken stock of their instruments of speech and have brought spelling into conformity, partly with phonetics, partly with common sense. In our day the plodding German has detected anomalies in spelling his language and has fulminated the only thunderbolt with which he is acquainted—a military ordinance—for their prompt and immediate elimination. But we? Well, we practical Britons go on year after year, and age after age, using the most absurd instrument of speech known to man; when asked to make some moderate changes for our own benefit and for the benefit, above all, of our children, we raise objections on the score of trouble.—*St. Helen's Lantern.*

FERNDALE SCHOOL.

No. XVII.—A Dragon Fly.



(Libellula Trimaculata. L.)

* * * * * * *

To-day I saw the Dragon-fly
Come from the wells where he did lie.

An inner impulse rent the veil
Of his old husk: from head to tail
Came out clear plates of sapphire mail.

He dried his wings: like gauze they grew:
Thro' crofts and pastures wet with dew
A living flash of light he flew.
Tennyson—The Two Voices, Stanzas 3-5.

Teacher.—Do you know this specimen from our collection?

Scholars (chorus).—A dragon-fly.

T.—Look at its wings and tell me to which order of insects it belongs?

S.—To the *Neuroptera,* because it has *nerved* wings. Its wings are nerved like a piece of lace, but there are no holes in the wings like lace.

T.—What time of the year have you noticed the dragon-flies to be most abundant?

S.—During the holidays. They were very plenty flying about a pond near the road.

T.—Very good; July and August is the time, and the springy pond with a stream flowing from it is a very suitable place for them.

S.—They call them the "Devil's Darning Needles," and they say they will bite and sting.

T.—They never bite you, and they have no sting. You can see they have a very formidable apparatus for jaws, in our specimen, but they are of no use for biting large animals. They are very terrible to mosquitoes, flies, and even moths, however. They are powerful flyers, with great range of sight, and are most voracious insect killers.

S.—They must be useful to us, then.

T.—So they are; but they are often more useful before they become full grown flies.

S.—But their long abdomen and big head, with such awful eyes, make them look so hideous!

T.—Yes: those two huge compound eyes, each of which is made up of thousands of minute ones, visible nearly to the unaided eye, make it look like a dragon, to our fancy. There are three simple eyes in addition to those, situated on the upper surface of the head. A great many insects have these simple eyes in addition to the large compound ones.

S.—Do they live long?

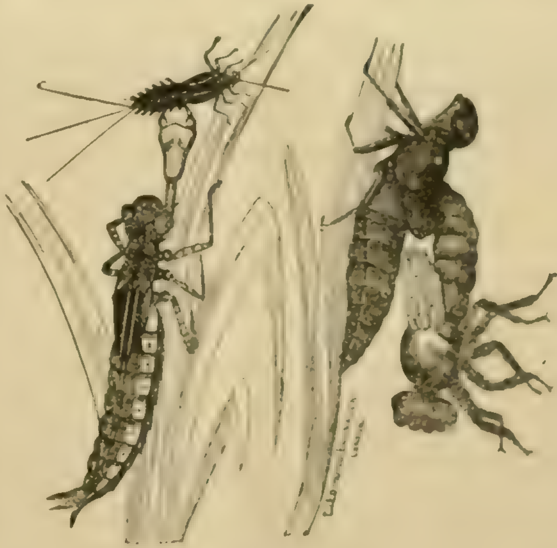
T.—For about twelve months, but the first eleven months are passed in an active life in water.

S.—In water! That is why they hover so much over the pond, is it?

T.—Exactly. The female dragon-fly attaches herself to a stem of grass growing out of the water. She then backs down until her long abdomen is below the water, where she glues some eggs to the submerged stem.

S.—Then the small *larvæ* would be drowned as soon as they would be hatched.

T.—Not at all. They are as much at home there as the *imago* is in the air. In fact, they are as much at home in the water as any other water insect. They are ugly six-footed things, like those in this sketch:



The larva grows rapidly to the size of the large figure on the left side. It can propel itself by squirting a stream of water from the end of its abdomen with considerable force. Its head is covered with a huge masked lower jaw, which it can suddenly throw out to a distance, as in our sketch, to seize a weaker body. It is a regular water tiger, destroying thousands of small insects which breed and live in this element.

S.—Has it a *pupa* stage?

T.—It has; but it is active even then, or else some of the other water insects might retaliate. Before midsummer, when the larva has grown too large for its skin, by a muscular effort it breaks open the outer skin over the back of the thorax, and fastening its claws over anything firm it soon works its larger but softer body out. The body soon hardens. It has small wing pads now, and crawls along the bottom of the water, seizing insects for its food as before.

S.—And how does it come out as the glittering dragon-fly?

T.—The picture to the right in our sketch shows that. When mature, about the first of July, the pupa climbs up a grass or reed stem near the surface of the water; the skin over the thorax bursts open, as in our drawing; the head is first got out, then, by moving itself backward and forward, the whole body is set free. For an hour or so it remains as if stupefied by the great change. Its small, motionless flabby wings rapidly expand to their full size. A few tremulous quivers in the air at length show that they are full grown, dry and firm. In the next instant it darts off, all gleaming in its sapphire mail, like an arrow jewelled with flashes of sunlight and rainbow, the most fierce and knightly insect destroyer of its rival insect kinds.

S.—Oh, I have often got the husks or cast-off skins of the pupa of the dragon-fly sticking to stems of coarse grass growing in the water, but I didn't know what they were. They are quite firm and hollow, and can be mounted like insects on pins.

THE SCHOOL ROOM.

Geography in Clay.

Modelling in clay, besides being useful in developing and making definite the ideas of form in connection with elementary drawing, is also useful in the proper teaching of geography. A rough model of Nova Scotia, New Brunswick or Prince Edward Island, for instance, could be made out of the pliant clay on a light, smooth piece of board. The board represents the level of the sea. Then fix the contour of the province. Next bring out the mountain ranges, sloping them down to the brooks and river beds, so as to show how water falling on the general surface would be drained into the sea. Then place the towns at points where it is most convenient for people to settle so as to have the best chances for communicating with other parts of the world, by a good harbor, or by a river. Then note the principal industries in each commercial area, and the causes of the increase of population in towns and countries. Why do towns grow in these spots and none on this mountain, or on this plain? Why did your own town grow at such a point instead of somewhere else? What effect would railroads have?—they are as convenient for transportation as rivers or the sea. Do railroads tend to disturb the old balance of town populations? How? Do you know any illustrations? Have inland points a better or worse chance for growing into towns since the introduction of railways? Do mountain ranges determine the course of railways, and therefore of towns that may arise on their course? Can an inland town grow to be a great city? Only at some points. Why? Give an example. Under what circumstances can a village grow at a railway station? When there is local trade. What will cause local trade? The neighborhood of mines or of a good agricultural settlement, or manufactures. Which of these is most dependent, as a general rule, on the character of the soil? The first two. Is the last affected by the character of the land surface? Yes; the presence of water power in a stream, of raw products, or convenience as a centre of distribution.

Clay models of the continents would graphically illustrate and impress on the mind the causes of the distribution of population; the causes of physical phenomena, such as the cool climates of table-lands, the limiting and separating effects of high mountains, rainy and rainless areas, the inundations in regions denuded of the forest, etc., etc.

Clay for the School Room.

Where potter's clay can be had, it should be used. It can be kept moist by being covered in a wooden, or, still better, an earthenware vessel, with water when necessary. It should be well kneaded or wedged before being used. Wedging is done by moulding in the hand and forcibly throwing it against a wall or floor so as to make its texture uniform. It should be just so soft as not to stick to the fingers. When modelling a napkin should be at hand to clean the fingers when the work is done.

Where potter's clay is not to be had, take some of the toughest and lightest colored clay in the neighborhood. Free it from sand and gravel by mixing it thoroughly with water in a vessel until the liquid becomes slightly thick. Pour off the liquid into a second deeper and larger vessel, being careful to let it rest sufficiently to prevent the decantation of any sand or gravel. Treat the remainder in the same way, so long as a considerable amount of clay remains. Treat more clay in the same way until the larger vessel is full. Then stir the whole until all the previously subsided clay is in motion. Let it settle permanently. Pour off the supernatant water. Take the clay out and work it with the hand. If it is too moist evaporation in the air will soon help it. If sand is present it will be in the bottom and can be left.

INTERPROVINCIAL CONVENTION.

[In the report of the High School Section, in last number, a reference to the paper on "Physics," by Principal E. Mackay of the New Glasgow High School, was inadvertently omitted. The following is an abstract of Mr. Mackay's paper, and its practical suggestions will be of great interest to teachers and students.]

PHYSICS IN THE HIGH SCHOOL

The science of physics investigates a class of phenomena underlying all nature. It is therefore of prime importance that the methods of teaching here employed should be of the soundest; for, sound or unsound, their influence may permeate all subsequent scientific study. Leaving out of consideration minor varieties, methods of teaching physics may be regarded as two—the lecture method, and the experimental method. The characteristic of the former is that the pupil first gains his knowledge of a physical law from his text-book or teacher, and afterwards sees its exemplification in experiments performed by the teacher; of the latter that the pupil performs for himself a series of experiments leading up to the law. Take, for illustration, any physical law—that of electrical resistance, for instance. When the lecture method is pursued, the pupil first makes himself acquainted with that law as stated in his text-book, and is then expected to watch the teacher, as with the aid of a galvanometer, a battery and a few coils of wire, he illustrates its truth. A knowledge of the same law obtained by the experimental method requires each pupil to perform for himself some such series of experiments as the following:

A battery, a galvanometer and a number of conducting coils are first supplied the pupil, and the character of the experiments he is to perform explained to him. He takes a coil of iron wire of known length and diameter, and connecting it in circuit with the battery and galvanometer, he notes the deflection of the magnetic needle produced by the current. He next connects up in a similar way a coil of copper wire of the same dimensions, and again notes the deflection; it is greater than before, denoting a greater current. He infers that the resistance of a copper conductor to the electric current is less than that of an iron one of the same dimensions, and hence that resistance varies with the substance of the conductor. If time permit, he may satisfy himself of the truth of this conclusion by substituting for the copper, coils of the same size of various other conducting substances. Taking next, say the copper coil, the pupil cuts it into two equal lengths, and connecting up each half in succession, he notes the deflection in each case. The deflections are the same, but greater than the deflections previously noticed for the entire coil. This experiment he repeats a few times, and, taking the mean of the deflections observed, he sets it down as the true deflection. If the galvanometer be one from the angle of deflection of which the real or relative strength of current may be calculated, he now finds, by comparing the current in the half-coil with that in the original, that the former is approximately double of the latter, or the resistance of the former half that of the latter. He therefore concludes, allowing for errors in experiment, that resistance is directly proportional to the length of the conductor. In a precisely similar way the pupil now compares the currents in conductors of the same length and substance, but of varying diameters. He is thus finally led to sum up the results of his experiments in the statement that the resistance of a conductor of uniform thickness to the passage of an electric current varies with the substance of the conductor, is directly proportional to its length and inversely to the square of its diameter.

The distinction between the two methods is thus apparent. The lecture-method requires the pupil to obtain a knowledge of nature through the medium of his teacher or text-book. The experimental method permits him to question nature for himself. Teachers and text-books have undoubtedly an important place in our present educational system. But the primary source of knowledge is nature, and both teacher and text-book occupy usurped places when they stand between the pupil and nature. The experimental method of teaching physics, therefore, since it alone admits of living contact with nature, is the only method which insures a knowledge of the science at once adequate and abiding.

The individual experimental work required of this method suggests a practical difficulty—insufficiency of apparatus. The difficulty is frequently over-estimated. That pupils may work simultaneously does not imply that each is supplied with apparatus of the same kind. It will usually be found quite unnecessary to duplicate apparatus. Suppose, for example, that working accommodation can be provided for the simultaneous work of a dozen pupils, a number sufficiently large for the teacher to properly superintend. Then, in preparation for each day's work, the apparatus required for a single experiment is placed in readiness for each of the twelve pupils. The general character of the experiments to be performed is first discussed; then each pupil takes his place at one of the pieces of apparatus. When he has finished his experiment he writes out its details in his text-book, and exchanges apparatus with any other pupil who has completed his work. In this way the same apparatus serves for each member of the class in succession.

To meet the requirements of a given class, the preceding method of working may need modification. Thus, while individual work should be encouraged, it may sometimes be advisable to allow two pupils to work together. Further, there is a very limited class of experiments which may often best be peformed by the teacher before the class. The essential principle to be kept in view is that, in the main, the pupil, not the teacher, must do the work.

With regard to apparatus, a consideration of practical importance is its cost. Expensive and elaborate apparatus is not indispensable. A boy can investigate the law of falling bodies almost as well with a smooth board and a rubber ball as with the most costly Attwood's machine. And in no other department of a teacher's work has his ingenuity so wide a field as in the devising of simply-constructed apparatus to take the place of costly appliances.

An objection frequently urged against the experimental study of physics is want of time. By those who hold that quantity of work should be subordinated to quality, it will be estimated at its true worth. He who has wrested from nature the fact that change of motion is proportional to the impressed force, even were this the sum of his physical knowledge, would be a better physicist than if he had learned to recite the whole of Newton's Principia without having gained an adequate conception of its meaning. And moreover, the book-taught pupil has been deprived of that admirable mental discipline which the study of physics affords, but affords only when taught in the living language of experiment.

Section D, Advanced Schools, met in the Leinster street school, St. John, on Thursday, at 9 a. m., July 19th. Principal Kennedy of the Albro street school, Halifax, was chosen chairman, and L. A. McKenna, of Dartmouth, N. S., secretary. "The Aims and Processes of Moral Culture," by J. W. Hickson, Principal of the Winter street school, Portland, N.B., was the first paper read. He showed the difficulties presented in the education of children on account of so many influences that are brought to bear on the child in the home, school, and in society. He believed in the inculcation of piety, justice, truth and honor.

"Physical and Moral Culture in the Playground," by W. T. Kerr of Woodstock, was the subject of the next paper. Mr. Kerr spoke of the advantages of physical exercises, and spoke of the moral atmosphere that should pervade the playground, under the superintendence of the teacher.

R. H. Campbell, of P. E. Island, read a paper on "Moral Culture." Both physical and intellectual training should be subordinate to the moral training. There is too much change in the employment of teachers for the sake of false economy, as it robs the children of the training and the experience of teachers whose place is supplied by the raw material turned out from the normal schools without any experience whatever. Train the conscience as well as the mind and the body, as morality cannot be taught from books, but by the actions of the teacher. Principle could be the guide in leading the pupils in the right way.

L. A. McKenna of Dartmouth, N. S., followed in an address on the same subject. The results of moral teaching are not always seen at once, but may be latent and working in the character, to be found in after life. Public opinion of the school was useful in cultivating this feeling. Religion is the foundation of morality and its support.

D. H. Burbidge, Principal of the Morris street school, Halifax, (since deceased) contributed a paper on "Grammar in the Common Schools," which was read by Principal Kennedy. He freely criticized, with much ability, defects in teaching English grammar, pointing out glaring inconsistencies in concord and government that needed to be eliminated from the study, and cited authorities in support of his position. Excessively minute parsing, he considered, is of little use, and only a waste of time in schools.

Geo. T. Miller, Principal of Hants County Academy, N. S., read a paper on the same subject. Scientific grammar is, in his opinion, the cause of all the trouble and drudgery when introduced into the common school work.

John D. McIntyre, of P. E. Island, contributed a paper on the same subject, read by Mr. A. C. Stewart. He thought too much time is devoted to the teaching of grammar.

Addresses followed by H. Y. Corey, of Acadia College, Mr. Lawrence of the Deaf and Dumb Instition, Halifax, and others.

THE YORK COUNTY TEACHERS' INSTITUTE will meet in Fredericton, Dec. 20th and 21st. Papers and addresses will be given by Mrs. Philips, Mr. Alonzo Kelley, Miss Ella Thorne, Principal Mullin, B. D. Branscombe and N. W. Brown. A public educational meeting on the evening of the 20th will be addressed by Mayor Hazen, Supt. Crocket, Dr. Bailey, Principal Mullin and Principal Parkin. The programme for the institute is a very interesting one and ought to attract, especially at the time named, a large gathering of teachers from all parts of the country.

HISTORY.

In the REVIEW for February we called the attention of our readers to the subject of the teaching of history. We offered some remarks upon the importance of this branch of instruction, and made a few suggestions which might serve to render the history lesson attractive and permanently useful. We had then neither time nor space to illustrate the method we would recommend, but now purpose to do so, and to take as our subject that chapter in English history which embraces the period of the Roman occupation.

But at the outset we must insist upon what is a necessary condition of all sound and successful teaching in any department of instruction—careful and intelligent preparation. The teacher should not only be familiar with the facts of his lesson, but he ought to have them so systematised that there would be, if possible, an interdependence of the various parts upon each other. In such a case the pupil, young or advanced, would find it not only easy but interesting to follow the subject as it is opened up to him, and derive pleasure from dwelling upon the recollection of it. And we doubt not that in proportion to the degree in which the teacher has secured the sympathy of the pupil will be his chance of arousing his desire to extend his reading beyond the school book and to acquire information for himself.

I need not say that, in the following scheme, the teacher must use his own judgment as to the degree of minuteness with which the lessons on this period are to be given. Not that the distinction between the work of a junior class and that of one more advanced is to depend upon the elaboration of details, but in the number of distinct topics which are attended to. Young pupils will more readily attend to, and remember, a few points placed before them in a skilful manner with considerable minuteness, than if mainly dry facts were presented to their minds, without any effort being made to stimulate their fancy and rouse their curiosity.

In the first place, the teacher should sketch on the blackboard a map of Great Britain, and write in the names of the leading British tribes; the Cantii, the Trinobantes, the Iceni and the Silures. He should then approximate to Cæsar's landing place, and the route which he followed in 54 B. C., when he crossed the Thames a few miles above London, and advanced upon and took the capital of Cassivelaunus, the chief of the Trinobantes. Here may very properly be introduced the materials which are available for an account of the ancient Britons.

1st. Commerce.—The Britons, from very early times, traded with the Carthagenians in tin, the point at which they touched being the Cassiterides (probably the Scilly islands). More recently they exported tin, lead, skins, hunting dogs and slaves to the mainland, and, as they advanced in civilization, corn, cattle, gold, silver, iron and pearls.

2d. The Race.—The Britons were Celts, of whom there were two branches in Britain—the Gael and the Cymry. The former are now represented by the Highlanders of Scotland and the Irish, the latter by the people of Wales and Cornwall. The Britons were chiefly of the Cymric stock.

3rd. Religion.—The following are the chief peculiarities of Druidism: The Britons were taught to believe in a plurality of Gods, whom they propitiated with sanguinary rites. They were urged by their instructors to be charitable toward men and to endure suffering with fortitude. The services of their religion were performed in the depths of the forests, and we know that the oak and the acorn were objects of veneration. The Druids were the priests. They enjoyed many immunities and possessed the civil and criminal jurisdiction. Closely connected with the Druids were the bards.

4th. Civilization.—Their commercial intercourse with foreigners had improved the condition of the tribes along the shore of the English channel, but in the interior of the country the people were shepherds and herdsmen, tattooed their bodies, and were much addicted to war. Their fortresses were clearings in the forest, in which their huts were built, surrounded by a ditch and a breastwork of felled timber. Their chiefs fought from chariots armed with scythes, whilst their followers were equipped with shield and sword and javelin.

I may remark that each of the above sentences may be regarded as a heading, and may be said to constitute a guide in arranging the materials which have been collected by the teacher.

Not till nearly a century afterwards did the Romans effect a permanent settlement in the country. The emperor Claudius, in person, landed, and was able to reduce the country from Essex to Hampshire, which became a Roman province. The British hero who led the army opposed to the Romans, who fought many battles in the south and centre of the country, and disputed with them the possession of southern Wales, was Caractacus. Whilst "the British warrior queen," Boadicea, in the eastern part of the country, emulated his fame by placing herself at the head of her oppressed countrymen and carrying fire and sword through the Roman settlements which had been planted within the conquered territory. This rising was quelled by Suetonius Paulinus, whom it had recalled from the slaughter of the Druids in the island of Anglesea. Agricola carried the arms of Rome to the foot of the Grampians, and there met and defeated, after a stubborn resistance, the Caledonians, under their principal chief, Calgacus. Though he overran the country, and though his fleet sailed through the Moray and Pentland Friths, and coasted along the western shores of Scotland and England, partly for geographical purposes, but chiefly to overawe the natives, Agricola had to content himself with the southern part of Scotland, and secured it by a line of forts and a rampart extending from the Clyde to the Forth. Under his beneficent and conciliatory rule (78–85) more was accomplished in consolidating the Roman power and winning the confidence of the Britons than by any of his predecessors.

The northern frontier appears to have been, even at that early time, the most uncertain of all the possessions of the masters of the southern part of the island. When Hadrian visited the country, and had personally inspected the region between the Tyne and the Forth, he determined, with his accustomed moderation, to abandon it to the Caledonians and protect his northern border by a line of defences reaching from the mouth of the Tyne to the Solway; and although there was a departure from this moderate policy during the reign of Antoninus Pius, when the boundary of Agricola was resumed, the duty of maintaining so distant a frontier in the neighborhood of enemies so warlike, watchful and irrepressible as the Caledonians, and which required for its performance so many of the best troops of the empire, was considered by the emperor, Severus, as too costly and hazardous. He withdrew to the line selected by Hadrian, and erected a series of permanent forts, connected by walls, which remained till the downfall of the empire, the bulwark of Roman Britain. That it was not an effectual defence is evident from the fact that, in the time of Valentine I., the turbulent tribes of the north, taking advantage of the weakness of the garrison, broke through it and penetrated as far as London, where they were met and defeated by Theodosius.

In the map which has already been drawn, I would now mark off as accurately as possible the provinces into which Britain was divided by the Romans: Britannia Prima, Britannia Secunda, Flavia Cæsariensis, Maxima Cæsariensis, Valentia; the lines of the Roman walls and the chief Roman towns: Londineum, Verulamium, Camulodunum, Deva, Eboracum and Isca Silurum.

The condition of the conquered and subject Britons can be readily ascertained from their utter helplessness when the protection of the Roman legions was withdrawn. They were encouraged by their masters to cultivate the arts of peace, but they were precluded from serving in the army in their own country. The best of their youth were drafted off to fight the Roman battles in other lands, and there they distinguished themselves, but never returned. The Romans were the privileged class; they held all the important civil offices; generally enjoyed exemption from taxes; were favored in the administration of the laws, and treated the Britons with haughtiness and cruelty. Latin, being the language of the conqueror, was used in all legal proceedings, and any Briton who hoped for justice, or preferment to one of the minor civil positions, had to acquire a knowledge of it. The chiefs and wealthy Britons were encouraged in their desire to adopt the luxurious habits and vices of the conqueror, and soon, from this class at any rate, the last vestige of national sentiment and public spirit disappeared with their ancient language and traditional simplicity of life. In Wales, Cornwall, and the parts of the country farthest removed from the Roman colonies and municipal and other towns, the language of Britain was still spoken, but centuries of oppression and misery had reduced them to a condition of wretchedness and despair.

Wherever the Roman held sway, he left behind him abundant evidence of his presence. From the foot of the Grampians to Land's End many camps can be pointed out, and some of them wonderfully complete. Roman roads are being constantly laid bare, Roman villas covered by the accumulated rubbish of many centuries, and in a good state of preservation, have been restored to the light; Roman baths, and even Roman towns, such as at Silchester, have afforded rich materials to the students of classical antiquities. The many towns that end in -chester (castra), and the Roman features still marked in the countenances of the people in certain districts of England, also bear testimony to the lasting impression left in the country by that masterful people.

The whole of this subject can be overtaken in three lessons. The first embraces Cæsar's invasions and the account of the condition of the Britons when the Romans first came into collision with them; the second comprises the summary of the history of the conquest and occupation; the third consists of what we know of the influence exerted by the Romans upon the Britons; the social condition of the subject race. the confusion, helplessness and disasters which followed upon the departure of the Romans, and the remains which still exist as evidences of their residence in Britain.

Seventy graduates and ex-cadets of the military college, Kingston, have secured commissions in the imperial army since 1880.

THE SHEPHERD DOG OF THE PYRENEES.

Traveller.—Begone, you, sir! Here,
Shepherd, call your dog.
Shepherd.—Be not afraid, madame, poor Pierrot
Will do no harm; I know his voice is gruff,
But then his heart is good.
Trav.— Well, call him, then.
I do not like his looks. He's growling now.
Shep.— Madame had better drop that stick. Pierrot,
He is as good a Christian as myself,
And does not like a stick.
Trav.— Such a fierce look!
And such great teeth!
Shep.— Ah, bless poor Pierrot's teeth.
Good cause have I and mine to bless those teeth.
Come here, my Pierrot. Would you like to hear,
Madame, what Pierrot's teeth have done for me?
Trav.—Torn a gaunt wolf, I'll warrant.
Shep.— Do you see
On that high ledge a cross of wood that stands
Against the sky?
Trav.— Just where the cliff goes down
A hundred fathoms sheer, a wall of rock
To where the river foams along its bed?
I've often wondered who was brave to plant
A cross on such an edge.
Shep.— Myself, madame,
That the good God might know I gave him thanks.
One night—it was November, dark and thick
The fog came down—when, as I reached my house,
Marie came running out. Our little one,
Our little four-year-old Louis, so she cried, was lost
I called Pierrot. "Go seek him; find my boy."
And off he went. Marie ran, crying loud,
To call the neighbors. They and I, we searched
All that dark night. I called Pierrot in vain—
Whistled and called and listened for his voice.
He always came and barked at my first word,
But now he answered not. When day at last
Broke, and the grey fog lifted, there I saw
On that high ledge, against the dawning light,
My little one, asleep; sitting so near
That edge that, as I looked, his red *barrette*
Fell from his nodding head down the abyss,
And there, behind him, crouched Pierrot,
His teeth—
His good strong teeth—clenching the jacket brown,
Holding the child in safety. With wild bounds,
Swift as the grey wolf's own, I climbed the steep
And as I reached them Pierrot beat his tail,
And looked at me so utterly distressed,
With eyes that said, "Forgive; I could not speak;"
But never loosed his hold till my dear rogue
Was safe within my arms.
Ah, ha! Pierrot,
Madame forgives your barking and your teeth.
I knew she would.
Trav.—Come here, Pierrot, good dog;
Come here, poor fellow, faithful friend and true;
Come, come, be friends with me.

ELLEN MURRAY.

[For the Review.]

A COLLEGIATE "AT HOME."

The authorities of Acadia College would seem to have taken a "new departure," and to have done so of purpose. It will be remembered that at the time of the late jubilee of the college a grand reception was given by the senate of the institution to its friends and the general public. Hundreds were present, who were at the time in the village from the three provinces represented in the college, and from other parts, which number was swelled by probably as many more from the village and neighborhood. This last was, from a certain point of view, *the special feature of the occasion*, and which commanded special attention, as there had never before been such an intercommunication between the institutions and the inhabitants of the place. The evening was devoted to social intercourse, intermingled with music, vocal and instrumental, given chiefly by the college choir and by certain young ladies of the seminary and the village.

Last Friday evening there was another reception of the same kind, though more local, as there was no unusual concourse, as before, of visitors from abroad; it was given on this occasion by the college faculty. The assemblage was modestly denominated in the cards of invitation an "At Home," and was made up, in addition to those belonging to the college, academy and seminary, chiefly from inhabitants of the village. Here was a repetition of the most marked peculiarity of the reception given by the senate. Between three and four hundred were present on this the faculty's "At Home." The exercises were of similar character to those of the former occasion, and were such as to give general satisfaction and rational enjoyment, and put up to a greater extent than at the senate's entertainment, as the spacious halls of the college were not crowded as at it, but all had breathing room. It is usual in notices of this kind to extol the singing, but as I forgot to invoke the muses of history, poetry, eloquence, etc., I will not attempt anything more than to say that it was eminently melodious, harmonious, scientific, classical, modern and polite, and therefore deserving of all praise!

There is probably a meaning in this "new departure" of the authorities of Acadia College, and it seems to be one not difficult to divine. It is a well-known circumstance that in most towns and villages in which higher institutions of learning are situated, there is a degree of unfriendliness between the students of the latter, on the one hand, and the inhabitants of the place on the other, which disposition sometimes assumes very inconvenient and injurious proportions, leading to the destruction of property and even to the loss of life. This hostility is symbolized by the expression, "the Town and the Gown." There has not been much of this hostility in connection with the Horton institutions, but there have at times been indications of a latent spirit of antagonism, and possibly the authorities have reached the conclusion that there was not as much friendliness as desirable. If so, we can discern a meaning in these receptions—this new policy, as it may be denominated—but whether such conjectures are well founded or not, this much must be admitted: the occasions referred to were eminently calculated to multiply and deepen kindly sentiments; the influence exerted was in the direction of causing the community more than previously to regard the institutions as *theirs*, and on the other hand to lead the students and pupils of the schools to consider the inhabitants of the villages as *friends*. This would indicate on the part of the authorities a measure of wisdom and philosophy which is worthy of consideration and commendation, and might be offered as an example deserving of being followed, or at least tried, by similar institutions nearer or more remote. CHRONICLER.

Wolfville, Nov. 26, 1888.

For the REVIEW.]

An Acquaintance with Frœbel's System a Necessary Part of the Teacher's Training.

The adoption by the Boston School Board of Mrs. Shaw's Free Kindergartens is the educational event of the year. They amount in number to nearly thirty, are well equipped and in splendid working order. They represent the sum of not less than a quarter of a million of dollars, judiciously expended by their noble founders. Boston has been somewhat tardy in accepting this new charge, but, having done so, she is prepared to meet the new responsibility and to discharge its duties thoroughly and with a wise foresight. Henceforth the pupils of the Girls' Normal School will not only study the kindergarten theoretically, and as a part of pedagogic history, but practically, and in its special relations to the common school. The city board has provided for a series of lectures by Miss Laura C. Fisher, who is an accomplished and experienced kindergartner. Three lectures have already been delivered. The Rice Training School, numbering more than a thousand pupils and having over twenty departments, which are accommodated in the two buildings on Dartmouth and Appleton streets, will, in its fine kindergarten, afford full scope for observation and practice. Admission to the normal school depends upon a certificate of having passed the fourth year of the high school, or an examination or its equivalent, and the applicant must have attained her eighteenth year. Thirteen years of life in the best schools of Boston lie behind some of these girls, who will thus have minds capable of understanding the philosophy of Frœbel's system. With the breadth and culture which comes of long training, they will apply his principles intelligently and not be mere smattering empirics, bringing discredit upon the truth. Dr. Dunton, the head master, is in full sympathy with advanced educational ideas. He is, moreover, fitted, by European travel and lengthened experience, to lead the new enterprise to a successful issue. He was much pleased to hear of our work in Truro, and thought the "short course for teachers" a very wise plan. We do hope that many of our teachers, especially those in the primary grades, will avail themselves of the privilege of observation in a kindergarten than which, in a somewhat extended tour, we do not remember to have seen a better.

C.

Halifax, N. S.

THE SCHOOL DISTRICT AND TEACHER.

What number of ratepayers is necessary to transact the business of the annual school meeting? This is a question that is often asked, and indeed many notices of meeting have each year to be given needlessly, because this point is not understood. An idea has got abroad in some way that seven ratepayers constitute a quorum. As many ratepayers should be present as can do the business. And let us see how many that need be: There must be a chairman and secretary, and some one to move the resolutions. If the secretary is a ratepayer he can move or second resolutions. In that case only three are required, absolutely, though it is desirable that all the ratepayers in the district should be present. There is sure to be grumbling done concerning the action of the meeting, and in nine cases out of ten the complaint comes from some one who has not attended. Ratepayers who have children to send should always come to the annual meeting, as those who have none and have heavy taxes to pay are pretty sure to be present and either endeavor to vote as small a sum as possible, or nothing at all. It would be surprising to note, if the statistics were available, the number of districts in which the board of trustees is composed wholly of ratepayers who have no direct interest in the support of a school. It is owing to this state of affairs that so many schools are kept in operation during only a part of the year, and that low class and cheap teachers are more in demand than high class teachers. A request to force a school comes with very bad grace from a number of ratepayers who have not attended the annual meeting to look after their own interests. The secretary of the board is, by law, secretary of the meeting, but this is very often overlooked by the meeting, and an election is held. This is only allowable when the secretary is not present or there is no secretary. The trustees too often neglect to make a written report concerning the educational condition of the district, and fail to place before the meeting an estimate of what will be needed for the ensuing year. When this is left to the meeting there is pretty sure to be an under-estimate made, which cramps the service and renders it inefficient. There are a few districts which always have one year's supplies ahead. In these districts the teachers never have to wait for their pay, and everything being done on a cash basis ensures economy and satisfaction all around. It is a pity that all districts would not adopt this plan.

Auditors are very often neglectful of their duties. Instead of availing themselves of the two weeks allowed by law in which to examine the accounts of the trustees, a cursory glance at them for a few minutes on the morning of the meeting suffices, and the result is not satisfactory. The auditor should not only decide upon the accuracy of the accounts, but also of the legality of the expenditures, and if the meeting fails to decide upon the matter in dispute, it is to be referred to the inspector, whose decision shall be final. It sometimes occurs that the accounts are not audited at all. In this case the meeting usually appoints an auditing committee, and passes upon their report. Each year's accounts should be kept separately, as far as possible, and after once having been passed by the meeting it is doubtful if any after-action can be taken upon them. The inspector is often requested to take action on expenditures which have been made four or five years back, and which have been passed by the meeting. This he can not well do. Each district should have an account book, which is its property, and in it should be kept all the accounts. This is very often neglected, and it renders auditing the accounts very difficult in consequence. After the first annual meeting at the second and third a trustee goes out by lot, then one goes out each year in regular order. A trustee cannot resign at the annual meeting and another one be elected to fill his place. He can only resign with the consent of his co-trustees and the inspector. This point should be carefully attended to, as its neglect would render the proceedings of the board illegal. The newly-elected trustee should take the declaration of office before the chairman, and if the chairman be elected trustee, he must make it before the secretary. In the case of an appointment of a trustee by the inspector, some person shall be named by him to receive the declaration. The refusal of a trustee to take the declaration of office within ten days of the meeting vacates his office. Where a trustee declines to act another may be appointed by the inspector, upon requisition of seven ratepayers of the district. Where a trustee obtains consent to resign the trustees may call a meeting to elect another. C.

(To be continued.)

It is true that too many—in fact, the majority of our schools—are insufficiently supplied with apparatus. Much can be done by an energetic teacher towards having such deficiencies supplied. Cases have come to my knowledge in which trustees have rendered a cheerful compliance with the requests of teachers for additional apparatus after having proved obdurate to the alleged pleadings of several of their predecessors. The urgency which comes from a desire kindled by a want *really* felt stands a good chance of gaining its object. Trustees wish to be assured that an article will prove useful and not a merely ornamental addition to the school room before investing in it. Again, some teachers, by preparing school entertainments and charging a small admission fee, have realized sums sufficient to add very materially to school apparatus. Comparatively little has been done as yet in the line of "home-made" apparatus. The making of neat cabinets for the preservation of specimens in connection with lessons in nature; the preparation of models of solids, and many other articles useful in the school room, is surely within the ability of some of the larger boys in many country schools. Let the teacher be in earnest and no term need pass without some valuable addition to school apparatus.

R. MACLELLAN.

QUESTION DEPARTMENT.

Questions and Answers.

S. L. T. W., HAMPTON.—I send you by mail a specimen of animal life found about 18 or 20 inches below the surface of the ground. What is it? Please state in the REVIEW.

One month and two days after the date of your card (Nov. 2nd), the earth in your parcel was poured out for examination. The only conspicuous remains of animal life were two pretty well dessicated specimens of *gordius*. This hair-worm is generally found in water, being parasitic in its earlier stages in the larger aquatic insects. The habitat of your specimens, unless the ground was marshy or occasionally covered with water, might indicate a different species from *gordius lacustris*, Fabr. (the common hair worm)—viz., a hair worm parasitic in some earth-burrowing insect or worm. *Gordius* belongs to the family *Gordiacea;* to the order, *Coelemintha;* to the class, *Annulata;* to the province, *Articulata.*

SCHOOL AND COLLEGE.

McGill University, Montreal.—A prize in books, to be entitled the "Charles G. Coster Memorial Prize,' and intended as a tribute to the memory of the late Rev. Charles G. Coster, M. A., Ph. D., Principal of the Grammar school, St. John, N. B., is offered by Mr. Colin H. Livingstone, B. A., to the undergraduates in arts of McGill (men or women), from the Maritime provinces, in April, 1889. It is not restricted to any academic year, and will be awarded to that undergraduate from the Maritime provinces who, in the opinion of the faculty, shall have passed the best sessional examination. In 1890 it is to be restricted to undergraduates of the first year.

Through the efforts of President Harrison and other gentlemen, a room has been fitted up in the University at Fredericton for the students of the Young Men's Christian Association.

The attendance of students at the University of Dalhousie is 200. Fifty-seven are in the law school.

Two hundred and forty students are now in attendance at the Pictou academy.

Sydney Academy has the largest attendance in its history this present term. The same report comes from the New Glasgow High School, Nova Scotia.

Seven thousand one hundred pupils have enrolled in the schools of Halifax during the past year. Teachers, 110.

St. Francis Xavier College, Antigonish, N. S., has six professors in its teaching faculty. Acadia College, Wolfville, has also six.

Two thousand pupils have been taught singing by note last year in the schools of Halifax, as compared with 377 the previous year. The tonic sol-fa system has been principally adopted, which, according to the report of Supervisor McKay, seems to be the best for popular use. Ear-singing is very general in the schools.

PERSONAL NOTES.

Miss Halbeck, one of the teachers in the Ladies' College, Halifax, is a cousin of the President-elect of the United States.

Miss Annie MacDonald, graduate in *Pianoforte, Harmony and Theory,* of the New England Conservatory of Music, under Louis Maas, St. A. Emery and F. W. Hale, has been appointed music teacher in the art department of the Pictou Academy. There are three classes in this division of the art department—1, pianoforte; 2, harmony; 3, vocal culture. In this latter the Garcia system of voice development is followed, together with studies in melody by Concone, Bordogni and others.

LITERARY NOTES.

Ginn & Co., Boston, announce a new edition of Allen & Greenough's Latin Grammar, to be ready Dec. 15th.

D. C. Heath & Co. have just published Historiette's Modernes, by Prof. Fontaine, of the Washington (D. C.) High School. The book contains 160 pages of interesting reading matter. Price, 60 cents.

The house issued the same day Leander's Traumereien, made up of good, easy German prose, intended for beginners or intermediate classes. 106 pp. Price, 25 cents.

Ginn & Co., Boston, will publish in January two important works, The Leading Facts of English History," 448 pages, including full maps and tables; and The Leading Facts of French History, with maps and tables.

D C. Heath & Co., Boston, have in preparation an *American History,* on the same plan as Miss Sheldon's General History.

BOOK REVIEWS.

Promissory Notes and Drafts, by J. W. Johnson, F. C. A. Published by the Ontario Business College, Belleville, Ont. This is a useful pamphlet of sixteen pages, by one of the best known accountants in Canada, and it contains information which every business man should know.

Report of the Mining and Mineral Statistics of Canada for the Year 1887, by Eugene Coste, M. E., of the Geological Survey of Canada. This work is a most useful compilation of statistics, and is well indexed.

Preparatory French Reader, with notes and vocabulary, by O. B Super, Ph. D. Publishers: D. C. Heath & Co., Boston. This is a graded course in reading adapted to the wants of teachers who believe in early and copious reading. The author thinks that the best method to read French, or any other language, is *to read,* and certainly in the charming selections he has made, and in the manner he has adapted them to different grades of pupils, he has paved the way to make French more popular.

MacMillan's Course of French Composition, by Eugene Fasnacht. London: MacMillan & Co., and New York. This is a work that beginners in French and those who wish to obtain clear ideas in regard to writing French, will welcome. To invite to the study, a string of easy French stories are given, followed by a graded course in French composition. The course is effective because it is practical.

Notes on the Myology of Ursus Maritimus by Edwin A. Kelley, Proc. Acad. of Nat. Sci., Philadelphia. The muscular system of the bear has at last been most thoroughly treated in Mr. Kelley's excellent monograph of some fourteen pages. The work is one of great scientific interest, and is a most valuable contribution to comparative anatomy.

History of Pedagogy, by Gabriel Compayre, translated by W. H. Payne, A. M., and Lectures on Pedagogy, by the same author and translator. Publishers: D. C. Heath & Co., Boston. It is difficult to estimate the importance of these admirable works to teachers. The first, within the compass of some six hundred pages, traces the growth of instruction from the nations of antiquity to the present. No one can fail to be impressed with the judgment, skill and research which the author has brought to bear in selecting from such an illimitable field the material for his work. In his Lectures on Pedagogy the author has displayed the same critical taste and acumen. He has selected from the vast field of principles and practice of education those indispensable ideas which should be the common property of all who attempt to educate children. It is a sequel to the History of Pedagogy. It is practical, and seems at once to go to the point in everything which it touches. It is written in that spirit which aims to help those who are seeking, through study, experience and personal reflection to become wiser and better teachers.

Latin Accidence and Exercises, by Welch & Duffield. London: MacMillan & Co., and New York, 1888. A small, cheap hand-book of 75 pages, with easy exercises. Just the kind of book for a young student to master and feel good over.

Old South Leaflets, Nos. 1 to 12; D. C. Heath & Co., Boston. Sixteen-paged pamphlets on such subjects as: No. 1, Constitution of the U. S. A.; No. 2, Articles of Confederation; No. 5, Magna Charta; No. 6, Vanes's "Healing Question"; No. 12, The Federalist. Five cents per copy.

On the Histology of Salpa, by Chas. S. Dolley, (from the Proctor of the Academy of Natural Science, Philadelphia, Sept. 27th, 1887). Dr. Dolley's paper is a very thorough exposition of the histology of this obscure genus. It is illustrated by a fine plate.

Elementary Statics, by the Rev. J. B. Lock, M. A., senior fellow, assistant tutor and lecturer in Gonville and Caius College, Cambridge, formerly master at Eaton. London: MacMillan & Co., and New York, 1888. This is a neat work of some 250 pages, got up in the usual superior style of the publishers. Of the making of books there is no end, and even elementary statics can furnish an illustration. But this small volume has a reason for existence. First, paragraph and type contribute to make the usually neat definitions and statements conspicuously clear; secondly, the logical steps are short and well directed; thirdly, it gives a capital collection of progressively arranged exercises under each head; and fourthly, it is as well adapted to be an introduction to practical mechanics as to the more advanced theoretical study of physics.

Monographs on Education; English in the Schools. Woodward. D. C. Heath & Co., Boston. A capital treatise of twenty-five pages on English in the schools. The plan of publishing such education-monographs should be encouraged by every proper means, as in no way can the best thoughts be more rapidly and cheaply disseminated.

The Civil Service Question Book. C. W. Bardeen, Syracuse, N. Y., 1888. A capital hand book of exercises for every teacher. It contains questions in arithmetic, geography, book keeping, letter writing, English syntax, United States history and civil government, with historical tables, and the constitution of the United States, and is intended to be a sufficient review in all the subjects upon which questions are asked in civil service examinations. The book contains nearly 300 pages, has full answers to the questions, and gives directions as to applications for examination and position. It will be specially interesting to the Canadian whose cosmopolitan geographical and historical education makes him, as a general rule, a more intelligent individual than the corresponding unit in the aquiline republic.

(1) Instruction in Music for the Public Schools, (2) New First Music Reader, (3) New Second Music Reader; (4) New Third Music Reader, (5) The Independent National Music Reader. By Luther Whiting Mason; Ginn & Co., publishers, Boston, 1888. There are probably no books in existence which lead the learner more pleasantly and thoroughly to sight reading of the ordinary and universal musical notation. The teacher with simply an ear for music can from them teach himself with the greatest facility, and at the same time learn how to present the art to his pupils in a most lucid and effective manner. Among the changes imminent in the future is a greater attention to musical instruction in our public schools. At present our authorities encourage it. In the near future it may be made compulsory. While the works which we now commend are specially valuable in the hands of our teachers, we must acknowledge that many of the patriotic songs are not such as commend themselves necessarily to Canadians, and no Canadian worthy of the name would endeavor to instil patriotic sentiments directed to a foreign country into the minds of his pupils. But this view presents no difficulties, as distinctively Yankee songs will not be out of place in the book so long as Canadian or British songs are selected in their place for the school room; but for making the reading and practice of music easy, we have seen no course better than the above.

A Text-book of Euclid's Elements, Books I. to VI., for the use of schools, by H. S. Hall, M. A., formerly scholar of Christ's College, Cambridge, and F. H. Stevens, M. A., formerly scholar of Queen's College, Oxford, masters of the military and engineering side, Clifton College. London: MacMillan & Co., and New York, 1888. This text-book, of 280 odd pages, is also published in two parts, viz., Books I. and II., and Books III., IV., V. and VI. Advantage has evidently been taken of all the good points in former text-books. There is a delightful sparing of words, aided by the resources of paragraphing and typography. The Euclidean method is preserved intact, while particular defects are remedied. The exercises are accompanied at intervals by superior sets of exercises. As usual with the MacMillans, the typography itself is no small merit in the work. It demonstrates about as clearly as the demonstrations.

Grip's Comic Almanac.—This well-known annual, for 1889, is now in the bookstores. For ten years Canada's "own and only" Comic Almanac has delighted her people, and the new number is decidedly the best of the lot. The calendar pages are unique and ingenious; the double-page cartoon, "Irrepressible Tug of War," is first-class, while there are several full-page cartoons of no less merit, and any number of side-splitting illustrations. The letter-press is capital reading. Ten cents will secure the book at any newsdealer's—a modest tax for so enjoyable a *melange*, surely.

EXCHANGES.

Science of Photography, November, has the concluding paper of a series by Xanthus Smith on "Composition in Landscape Pictures" This journal is a fine example of the typographical art.... The *Academy*, June, a superior monthly, devoted specially to the secondary education, issued under the auspices of the Associated Academic Principals of the State of New York.... *Volapuk*, a monthly journal of the "World Language"; Charles C. Beale, editor, Boston.... *The Swiss Cross*, November, has an interesting illustrated article on a lava-flow in the Hawaian islands.... "The Reorganization of the British Empire," by G. R. Parkin of Fredericton, in the December *Century*, should have many Canadian readers.... "The Bells of St Anne" is a finely illustrated article in the *St. Nicholas* for December, containing, among other views, one representing the Parliament buildings at Ottawa.... The *Popular Science Monthly* for December contains, among other articles of interest, a very readable one on "Atomic Worlds and their Motions."....*Science* of December 7th has an article appropriate for the times on "Pseudo-scientific Humbuggery.".... *The Illustrated London News* (New York edition) for December 8th is an elegant number of this popular weekly. It contains, among other illustrations, scenes in the Canadian Northwest ... *Garden and Forest* continues to maintain its high position. In the number for December 5 appeared an excellent article on the subject, "Do Forests Influence Rainfall?"....Every scientific and practical man should have the *Scientific American*. See the advertisement in another column..... *Grip*, with the new year, enters upon its thirty-second half-yearly volume, a fact which speaks eloquently for the merits of this unique and favorite Canadian journal. No former attempt in the field of humorous journalism in Canada was ever successful, because in no former case was there the happy combination of elements essential to the success of such a venture. In the first place, an uncommon fertility of invention is required to keep a comic paper abreast of the times, and this must be backed up by an artistic ability equal to the task of interpreting the happy thoughts evolved in a popular manner. Secondly, there must be the solid basis of right principle upon which to build. Truth, honor, fairness and good taste are all as essential to the success of a comic journal as of a magazine of the highest class. All these features have, from the first number, distinguished *Grip* in a high degree. It stands today alongside of the very best productions of its class in the world, and enjoys a fame far beyond the bounds of Canada. To Canadians it ought to be more and more an object of patriotic pride, and certainly but little can be said for the patriotism of any Canadian who pretends to culture, and can afford the price, whose name is not found upon *Grip's* subscription list. The subscription price is almost ridiculously low, when the rates of similar (and not equally able) journals elsewhere are considered. It is only two dollars a year, although the paper contains sixteen pages filled with bright original humor of pen and pencil, and always gives, without stint, political cartoons on passing events, which for point, power and humor are certainly unsurpassed in any humorous paper of the day. Get it for 1889 without fail.

Nova Scotia County Academy Entrance Examinations, 1888.

BRITISH AND CANADIAN HISTORY.

1. Relate the story of the quarrel between Charnise and Charles de la Tour.

2. Describe briefly (1) Discovery of the Mississippi, (2) Treaty of Utrecht, (3) Capture of Beausejour, (4) Settlement of Pictou, (5) First Rebellion in the Northwest.

4. Give dates for the following events in Nova Scotia history: Founding of Halifax, Expulsion of the Acadians, New Brunswick made a separate Province, Dominion of Canada formed, Visit of DeMonts, Massacre at Grand Pre, Arrival of Duke of Kent, Sir John Harvey (Governor of Nova Scotia).

4. Name the Sovereigns of the House of Hanover, and give the dates of their accession.

5. Describe the character of any *one* of the following Sovereigns: Henry VIII, Charles I., Elizabeth, George III., Richard III.

6. Name as many of England's naval victories as you can, and briefly describe any one of them.

7. Write a note on the Chartists.

GRAMMAR.

1. Write the passage dictated by the examiner, with due attention to punctuation and the correct use of capitals.

2. Give the two plural forms of each of the following nouns, explaining the difference of meaning in each case:—*brother*, *penny*, *die*, *index*.

3. State the circumstances under which *that* should be used in preference to *who* or *which* in introducing relative clauses.

4. Correct, where necessary, the following sentences:—
   (1.) It is fortunate that neither of you were ill.
   (2.) You hadn't ought to have asked that question.
   (3.) Our M.s P. and M.s P. P. are all good men and true.

5. Name and define the various moods.

6. Parse: Homeward weeping went Nikomis,
   Sorrowing for her Hiawatha "

7. Analyze: Since you are so kind, I shall no longer refuse to tell you why I have come.

USEFUL KNOWLEDGE.

(*Ten questions will be considered a perfect paper*).

1. Describe the formation of coral islands and reefs.

2. What effect upon the soil has the action of earthworms?

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Professor of Moral Philosophy and Evidence of Christianity.
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R. V. JONES, M. A., Ph. D., Professor of the Greek and Latin Languages.
REV. E. M. KEIRSTEAD, M. A., Professor of English Literature, Logic and Psychology.
A. E. COLDWELL, M. A., Professor of the Natural Sciences, and Curator of the Museum.
L. E. WORTMAN, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.

3. Name and describe the parts of a plant known as the organs of vegetation.

4. How are clouds formed? Name the different kinds.

5. Of what substances is the wheat plant composed?

6. What is wind? Explain how it is produced.

7. Describe the life history of any one of the following: The potato bug, the sheep bot-fly, the clover seed midge, the butterfly.

8. Name the principal forest trees of Nova Scotia. Which do you consider the best for shade or ornament?

9. How do birds differ from reptiles.

10. Tell what you know about the amphibia of this province.

11. What are the chief properties of water?

12. Name the insects which you think are the most injurious to the farmer.

13. How do clothes keep us warm? Which is the warmest clothing, and why?

14. In what different forms do plants yield food for man? Give examples of each form.

15. What animals are considered the lowest of the mammalia, and where are they found?

16. Write a note on any one of the following: Moose, eagle, fox, bear, squirrel, robin.

[The following is the answer of a candidate to question 7, above, verbatim:

"The potato bug, which is very injurious to the farmer, is supposed to come down in the rain. The extent of its life is unknown."

The candidate was a young lady from a good agricultural district of the country, and is very probably a farmer's daughter.]

GEOGRAPHY.

1. Explain the terms, *isthmus, water-shed, continent, volcano, glacier, cape and plain.*

2. Name and locate the peninsulas of North America. Name the rivers of Europe, their direction, and the waters into which they flow.

3. Name the counties of Nova Scotia and Cape Breton washed by the Atlantic, and also state what counties have railways running through them.

4. In a voyage from Port Arthur to Windsor, N.S., through what waters and near what headlands would you pass?

5. Where and what are the following: Blomidon, Escuminac, Saguenay, Galt, Vancouver, Milwaukee, Rimouski, Roanoke, Matapan, Ladoga, Seine, Hecla, Ganges, Tasmania, Crimea, Congo, Cheviot and Humber.

6. Name the *ten* largest cities of the United States in the order of their size, and also give the State in which each is situated.

7. Describe the surface of the British Isles.

8. What waters are connected, and what lands separated, by the following straits: Gibraltar, Dover, Belle Isle, Hudson, Magellan, Babelmandeb and Bosphorus.

9. Draw an outline map of North America.

ARITHMETIC AND ALGEBRA.

1. Find the amount of the following bill of goods in dollars and cents, the shilling being worth 24⅓ cents:

124 yds. grey cotton at 5½d. per yd.
62 " stair carpet at 4s. 3d. "
156 " Brussels do. at 6s. 10d. "
96 " Scotch tweed at 4s. 6d. "

2. Add together ⅛ of a ton, ⅙ of a cwt., $\frac{1}{12}$ of a lb. and ¼ of an oz.

3. Find the value of

$$\left(\tfrac{1}{3}+\tfrac{1}{9}\right)\frac{20\frac{1}{4}}{3\frac{4}{7}+2\frac{1}{2}}$$

and state and explain the rule for reducing a vulgar to a decimal fraction, and simplify

$$\frac{2.02+6.48}{3.5}-(4.27+6.6).$$

4. How many bushels of grain will a bin hold, which is 10 ft. long, 4 ft. 6 in. wide, and 5 ft. 3 in deep?

5. If 1¾ bush. of oats cost 60c., what will 25 bush. 2 pks. 4 qts. cost.

6. A wholesale merchant sells goods at a discount of 75 per cent. on the retail price, he then allows a further discount of 25 per cent. for cash, what will he receive for goods the retail price of which is $200?

7. A man walks a certain distance, and rides back in 3 hrs. 45 min.; he could ride both ways in 2½ hrs. How long would it take him to walk both ways?

8. Which is the more profitable and by how much, to buy flour at $5.00 per bbl. on 6 months' credit or at $4.90 at 3 months' credit, money being worth 6 per cent.

9. Write the principal signs used in algebra, and explain the significance of each.

10. From $7x^3-2x^2+2x+2$ substract $4x^3-2x^2-2x-14$, and from the remainder substract $2x^3-8x^2+4x\times 16$.

11. Simplify $3a-[b-\{a+(b-3a)\}]$

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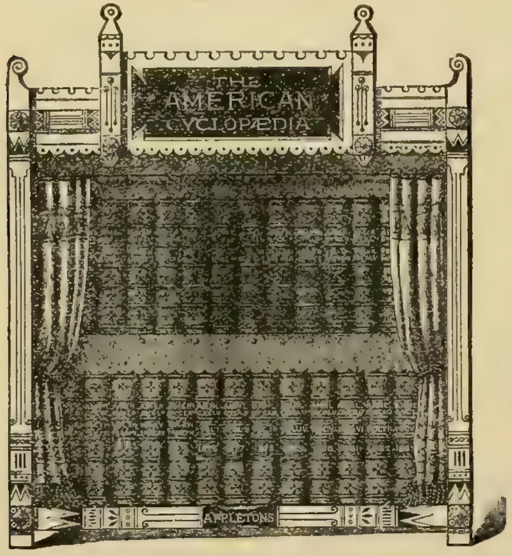

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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

SEVERAL articles unavoidably crowded out will appear next month.

THERE are a few who owe for the REVIEW. These amounts, to the individual, are very small. In the aggregate they are large, and would enable us, if promptly paid, to meet our liabilities promptly.

DR. TH. H. RAND has returned to Toronto from England, much benefitted in health—we are glad to learn. In a recent address to the students of the Toronto normal school, on "Character-building," there is proof that he has lost none of his old time force and earnestness. Here is one sentence: "Our distinctive greatness as a people is not going to depend upon our vast territory, material resources, miles of railways and canals, great commercial fleets, or even the price of land per foot in Toronto, but upon the sterling character of our men and women."

THE appointment of Mr. John Brittain, Principal of the Petitcodiac schools, to the chair of natural science in the New Brunswick Normal School is an excellent one. No teacher in the province has achieved more distinguished success, either in natural science or as a good "all round" teacher, than Mr. Brittain. It is with this record in his favor, we presume, that Mr. Brittain has secured the appointment, and it is a progressive step.

WE have received the first annual report of the Victoria School of Art and Design at Halifax, N. S., It has been most successful. Two hundred and eighty-two different pupils were enrolled during the first year 1887-88. The teachers of Halifax city enjoy a great privilege in having such an institution within easy access.

AN INSPECTOR who takes a deep interest in the REVIEW, regarding it as one means to benefit the teachers of his inspectorate, says: "The above (a list of twenty subscribers) is a small Christmas box from District ——— to the REVIEW. Is it exceeded "to any great extent" by other districts? We all wish it at the same time a happy and successful New Year. Wherever it is known it is heartily appreciated, and may 1889 spread its influence more widely."

We thank you and your teachers for the gift (which was *not* exceeded) and more especially for the hearty good wishes which accompany it.

WE have been requested to publish the following address by the committee appointed at the last convocation of the N. S. Summer School of Science to prepare and present it:

To A. H. MACKAY, B.A., B. Sc., F. R. S. C., President of the Nova Scotia Summer School of Science.

We, the undersigned, on behalf of the students of the Summer School of Science for the year 1888, desire to express our deep gratitude for the kind and zealous interest you have manifested in our progress in science, both personally and as a class.

The invigorating influence of your enthusiasm in this noble work has been a source of inspiration and pleasure to us. Beneficial results are already observable in the case of many who enjoyed the privilege of personal contact with you.

As a teacher, your methods of illustrating difficult subjects have divested them of tedium and imbued them with living interest.

The very successful record of the School of Science since its inception is due, we know, in a great measure to *your* indefatigable efforts, and we congratulate you on the excellent results attained at such an early stage in the history of the school.

Our hearty thanks are, likewise, due to Mrs. MacKay for her very kind endeavors on our behalf, which contributed to make our visit to Pictou so enjoyable as well as profitable.

Signed on behalf of the students of the S. S. of S.

Ida M. Creighton, }
W. T. Kennedy, } Committee.
L. A. McKenna, }

The address was cordially acknowledged by Mr. MacKay, who maintained that the credit was due rather to the zeal and tact of several individual fellow-instructors and students than to himself during the short but pleasant two years of the growth of the school.

McGILL UNIVERSITY.

The pre-eminence accorded to McGill among Canadian universities, its popularity among students of the Maritime Provinces, and its singular position as the chief educational institution of the Protestants of Quebec, who form only a very small fraction of the population of the province, would lead us to infer that our people would know something of its constitution and history. And yet of this most interesting chapter in the narrative of the development of education in the dominion, most people are absolutely ignorant; hence the necessity for such a lecture as that by Sir William Dawson, on " The Constitution of McGill University, Montreal," being the annual lecture in the session, 1888-89, and the obligation laid upon all who are interested in higher education to circulate it as widely as possible.

The publication of this university lecture at the present stage in the discussion of educational questions is exceedingly opportune, and in as far as it places before us a clear, concise and modest narrative of the incidents which mark the progress of the university, very satisfactory. The public spirit and foresight of the founder are only equalled by the skill, wisdom and zeal with which the governors have discharged the duties of their trust; and in nothing is this more noticeable than in the facilitywith which the university has adapted itself to altered conditions and has striven to satisfy new demands.

Perhaps one of the most gratifying features in the history of the university is its absolute independence of government assistance. It is solely a monument of the munificence and enthusiasm for higher education of the citizens of Montreal. Help from the state would have been welcomed, and was promised when the university "was embarrassed by pecuniary difficulty" and was at the point of extinction; but we question, if relief had come from that quarter, whether the citizens would have rallied around their university with the same spirit and have so thoroughly come to regard it as their own peculiar possession; at any rate, the retrospect would not now be so agreeable, and, annoyed by government interference, McGill would not hold the proud position of absolute freedom and public confidence which she enjoys at the present day.

1813–1884. This is the period that intervened between the bequest of the Hon. James McGill and that of Sir Donald Smith. The day of small things and struggle lasted from 1821 till 1852. When the amended charter was obtained, in the latter year, and Sir William Dawson appointed principal, in 1855, a bright period opened to the university. New chairs were founded, spacious buildings erected, museums established and a new faculty created; and to meet all these demands, Sir William says, "it seemed as if the liberality of the citizens of Montreal was forthcoming just at the juncture when some pressing want was staring us in the face."

The lecture proceeds to treat of the constitution of the university, the visitor, governor, corporator, etc., their powers, duties, obligations, and does so in a manner as explicit as it is interesting.

One thing strikes us as being a tower of strength to the university, and that is the Catholic basis, in respect of religion, on which it rests, and its liberal treatment of the students from the affiliated theological colleges who attend its classes. The same generous spirit is also manifested in the arrangement which has recently been made to admit students from the senior class of the normal school to the course in arts. Such enlightened action may be regarded, in relation to the community, as part of the return which is being rendered by the university for the benefactions of which it has been the recipient.

We have only been able to indicate some of the points treated of in this admirable lecture, but we would recommend every one who is interested in university education and the true welfare of his country, to procure the lecture and read and study it.

Of course, modesty forbade any but the merest reference to himself and his work in McGill, but everybody knows the narrative of the forward movement of McGill and its associate institutions is the history of the public labors of Sir William Dawson in Montreal in behalf of higher education.

EXAMINATIONS.

In the November number of the *Nineteenth Century*, there appears a protest, signed by many leading educationists and public men, against the mischief to which in Britain the practice of competitive examinations is leading. The systems of examinations which has been elaborated during the last thirty years, according to the terms of this protest, is productive of great physical injury to the constitutions of the young people who prepare for them; it tends to lead to uniformity in all educational processes, it destroys the best teaching by depriving the teacher of the power of intelligent self-direction, and by converting the pupil into a machine, it renders impossible a fair estimate of the values of different kinds of education in consequence of the monetary considerations which now cast their shadow over all educational work; it encourages an excessive cultivation of the "rote-faculties" and the power of cleverly skimming a subject, and it substitutes for the desire to obtain knowledge for the sake of understanding the world in which the student has to live, the marvellous forces among which he has to act, and the humanity of which he forms part, the ambition to secure a high place in an examination-list or some money reward. But a protest against a system productive of so much evil is of little practical value if it is not accompanied by a remedial scheme, which, while it avoids the mistakes of the system which is condemned, promises to retain all the advantages which it offers. Here, however, the protesters show that it is easier to find fault than to discover a substitute. The only suggestions which they can give are the appointment of a royal commission, the nomination of various committees, and a recurrence to the mode of preferment in use in the various departments of the public service, before the adoption of the system of open competition. Surely we can scarcely conceive of proposals more unsatisfactory, or less likely to lead to the removal of the evils complained of, and the inauguration of an era when education will not be sacrificed to examination.

In Canada—in the Atlantic provinces at any rate—examinations have not been organized to an extraordinary degree, yet we sometimes hear mutterings of discontent. It becomes, therefore, an interesting question to inquire in how far the mischief that is being done to the youth of Britain may possibly affect the youth of these provinces, and what means can be adopted to check it if it is already active.

As far as we can learn, examinations are not too frequent either at our universities or for teachers' licenses, and therefore it cannot be urged that in either case there is undue pressure. But it seems to be the tendency of examination to extend its influence and to embrace within the range of its operation every department of school work, from the highest to the lowest. In England there is scarcely a school but is reached by some process of examination. The government schools are examined by the inspectors to determine the amount of the grant to which they are entitled; all schools may send up pupils for examination at the Oxford and Cambridge "locals;" the College of Preceptors holds periodical examinations in all parts of the country, while the work in the grammar and high schools is tested by the universities in competitions for exhibitions and other prizes, and there is little doubt that, upon the whole, the stimulating effect upon school work, both on teachers and pupils, has been satisfactory. More activity has been evoked by these examinations than could have been produced by any other means; and yet the success that has attended this system, as not unfrequently happens, has led to results alike disappointing and disastrous. So long as examinations were reasonable in number and scope they were of admirable service to education, but since they increased to their present dimensions, and there has developed simultaneously with that growth a tendency in teachers to cram rather than to educate, they have been the master and not the servant of education. The sooner this tyranny ceases the better it will be for education.

But great care should be taken lest, in attempting to bring about a better state of things, what is useful is removed as well as what is mischievous. The objections to examinations which are raised in the protest are rather applicable to their abuse than to their legitimate employment. Some test of educational work there must be, and we cannot imagine any means so convenient, upon the whole so fair and satisfactory, and at the same time so stimulative, as examinations, under reasonable regulations, and conducted by men qualified by scholarship and experience for the performance of their duty. There is no method so easy and reliable by which a teacher can discover, in the case of his senior pupils, in how far they have benefitted by his instruction. If there be any subjects which have been misunderstood in the course of their treatment in class, an examination is certain to make this abundantly evident. Carelessness, inaccuracy and indolence are detected by the teacher, and readiness and conciseness of expression, together with definiteness of conception and the power of concentration of thought and energy, are acquired by the pupil.

Nor, if we look beyond the school-room, need we fear the results of rational examination. There is no plan which would yield such general satisfaction in the distribution of exhibitions, scholarships and other university awards, or in the granting of licenses to teach. But it must be remembered that the requirements of these examinations go far to determine the curricula of the schools from which the candidates proceed. If the amount of work expected is moderate, and the questions of a nature to test the thinking powers as well as the extent of the information of the examinee, the effect upon the schools and their teachers must be beneficial. There need be no fear lest the individual characteristics of the teacher be so dominated by the outside influence of examining bodies that they will have no opportunity to assert themselves and give tone and finish to his work. But we do not deny that the future examination exerts an overmastering influence over many teachers. The work for it is repeated again and again; the memory is almost the only faculty appealed to; examination papers instead of text-books are studied; helps of all kinds are called into requisition, and the pupils are crammed for the special purpose of passing a successful examination on the prescribed books. Such a result is very unfortunate, and the pupils who are so prepared are the first to feel it. They are not long in observing that they cannot grapple with difficulties as successfully as those who have been trained on different principles, and invariably fall behind in the future race their better equipped and better disciplined classmates. This difficulty could be met successfully if, instead of examining upon prescribed books or parts of books, *subjects* were specified upon which papers would be set. If Latin, Greek, mathematics, etc., were announced as the subjects of examination, without mentioning books, but accompanied by a statement that the candidates would be expected to know each subject as thoroughly as might reasonably be demanded of matriculants, cram would be almost impossible, and a more healthful educational tone would prevail.

Moreover, great care should be taken in the selection of examiners. Scholarship ought not to be the only condition which they are expected to satisfy, but they should be men of experience as teachers—prudent, fair and prompt. Their questions ought not to be *cranky* or pursue certain grooves, but should be characterized by clearness, point, and the avoidance of all complexity. The purpose of examinations is to afford the examinees an opportunity of exhibiting their knowledge of the subjects upon which they are examined, and not to provide an occasion for the examiner to display his skill in constructing puzzling, obscure and doubtful questions. Examination is intended to discover what the pupil knows, not what he does not know.

Though we have been, in this part of the Dominion of Canada, thus far, free from the evil of excessive examination, we can not be too watchful, lest we may, in the end, suffer from the mischief enumerated in the protest. Already written examination has—and, we think, unnecessarily—provided the basis of classification in large graded schools, and we all know the feverish excitement which is produced by its approach on the minds of nervous pupils. Surely, except in the case of the eldest scholars, an oral examination by the grading master, conjoined with the report of the teacher of the class, would be quite sufficient. An expert examiner will test the proficiency of the class, in any one subject, in halt an hour, by a skilful oral examination, more satisfactorily than by a written paper, which will take hours to examine. Let us, therefore, be warned by the results of over-examination in England, lest when it has here reached such gigantic proportions, we may find it impossible to relieve education from its constriction.

N. S. SUMMER SCHOOL OF SCIENCE.

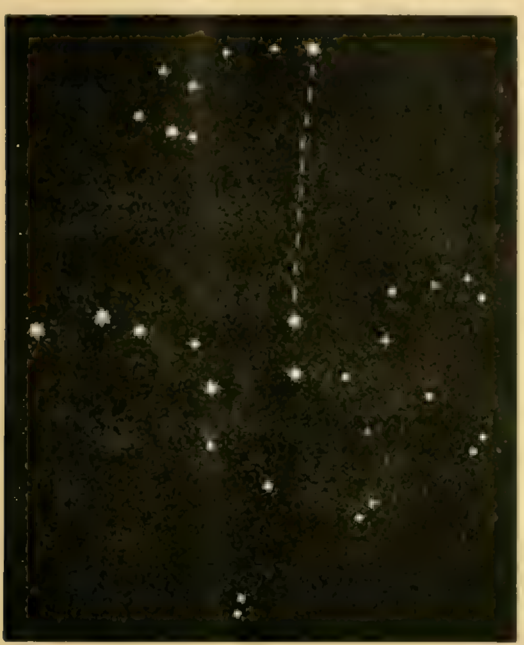
There was a good meeting of the directors of the Summer School, held in the Province building, Halifax, on January 3rd, President Eaton in the chair. The most important point of business was the definite fixing of the time and place of next summer's session, which were as follows: Time, from July 22d to Aug. 2d; place, Parrsboro, Nova Scotia. The public spirit displayed by the citizens of Parrsboro in the matter was highly creditable. At a meeting of its leading citizens it was agreed to specially prepare four good lecture rooms for the school, to pass a vote of money for chemical and physical apparatus, and to obtain board in its hotels and boarding houses at a rate not exceeding three dollars per week. Principal Craig of the Parrsboro High School was appointed local secretary.

Parrsboro is situated in the immediate vicinity of some of the most interesting and picturesque portions of the coast of the Minas Basin. Its minerals are found in all the important museums in the world; its scenery is borne away on numberless photographic plates of the tourists; the world-famed Joggins can be approached by railway from it, and the falls on the Moose river suggests further variety. Inspector Lay promises a large contingent of Cumberland teachers. There is every prospect that the third year of the school will have by great odds the largest attendance yet.

At a meeting of the executive of the Provincial Educational Association of Nova Scotia, in Halifax, on the 3rd of January, it was decided that the Association would meet at the usual time during the week preceding the teachers' examination in July. The dates will probably be July 10th and 11th; the place Truro.

AMONG THE CONSTELLATIONS.

NO. IX.—THE NORTHERN BEARS AND THEIR NEIGHBORS.



> "Thus some who have the stars surveyed
> Are ignorantly led
> To think those glorious lamps were made
> To light Tom Fool to bed "
>
> *Rowe—A Song.*

THE NEIGHBORS

Midway between the lesser and greater Bears winds, marked by a sinuous line of faint stars, the constellation *Draco*—the Dragon. It half encompasses *Ursa Minor*. We do not mark these stars in our present map, as we have not yet finished the interesting points in our two constellations of the Bears. Under *Ursa Major's* tail, nearly intermediate between the terminal star in the tail and the couple of stars in the lower paw, is the small inconspicuously starred constellations *Canes venatici*—the hunting dogs or greyhounds. It contains one star of the third magnitude, called *Cor Caroli*, not far from which is a star of the fourth magnitude. *Cor Caroli* can be easily found from this direction, as there is no other brilliant star in its neighborhood. It is interesting; first, because it is a double star, its companion of the sixth magnitude being only twenty seconds of arc from it—so close as to require a telescope to separate them. Secondly, a small circle, including *Cor Caroli* and its neighboring star of the fourth dimension, will include two and nearly pass through a third telescopic nebular star cluster.

Below the Greyhounds, and following the heel of *Ursa Major*, is a closely-packed constellation of about seventy stars of the fourth, fifth and sixth magnitudes called *Coma Berenices*—Berenice's Hair, or the Lady's Tresses.

Right below the two hind paws of *Ursa Major* is *Leo Minor*, the Lesser Lion; and below that, *Leo Major*—Leo of the Zodiac—a greater constellation, with the sickle-like configuration of stars in its breast and head.

In front of the Greater Bear is the inconspicuously starred constellation *Lynx*.

Cassiopeia, with its "W" outline of bright stars, and *Camelopardus*, with its absence of conspicuous stars, bind *Ursa Minor* on the upper side of the North Pole Star.

URSA MINOR.

Let us take the principal stars of this constellation in the order of our map:

Alpha (Polaris, or the North Pole Star) is of the second magnitude. It is at least so distant that light travelling from it to the earth at the rate of over 180,000 miles per second, would take forty-eight years to accomplish the distance. This is deduced from a parallax of 0.067″, measured by M. Peters. It is also a double star, the telescope separating from it a tenth magnitude star, distant 19″.

Delta is the second star and is of the fourth magnitude.

Epsilon is the third star and is of the fourth magnitude.

Zeta is the fourth star, of the fourth magnitude, and forms one corner of the rectangle.

Eta, at the other upper corner of the rectangle, is still fainter.

Gamma, at the outer lower corner of the rectangle, is of the third magnitude.

Beta, or Kocale, or Kochab, is at the fourth corner, is as bright as the Pole Star (of the second magnitude). It is a variable star of long period. It varies in brightness. *Gamma* and *Beta Ursæ Minoris* are often alluded to as the guards of the pole.

The small star about a degree from Kocale is a double star, which can be easily resolved with an opera glass.

URSA MAJOR.

Eta, or Alkaid, is the first star in the extremity of the tail of the Bear, or in the end of the handle of the Dipper.

Zeta, or Mizar, is the second. The three stars in the handle of the Dipper are of the second magnitude. But near *Zeta* is a faint star called *Alcor*, which can be seen separately by a good eye without a glass; hence it is called a "naked eye double." The distance appears large under an opera glass. It is 11′

(eleven minutes) distant, yet a powerful telescope shows a bluish companion star of the eighth magnitude within 14″ (fourteen seconds) of Mizar, which is therefore an interesting "telescopic double."

Epsilon, or Alioth, is the third star.

Delta, or Megrez, of the third magnitude, marks where the handle joins the Dipper.

Gamma, or Phecda, of the second magnitude, comes first at the bottom of the Dipper.

Beta, or Merak, next at the bottom.

Alpha, or Dubhe, next at the top. These last two are called the "pointers," because a straight line through them points nearly to the Pole Star.

The lower pair of stars, of the fourth magnitude, marking the hind paw of the Bear, are called respectively *Nu* and *Xi*. The last of these is a remarkable telescopic double.

The companion star is only 2″ (two seconds) distant, nearly as brilliant as its fellow, and they move around each other apparently in about sixty years. This appears to be a strong evidence that here we have two vast suns nearly of equal size revolving in a tremendous orbit around each other. Very many other doubles give indications of a similar connection. Sir Wm. Herschell observed 2,400 double stars, while Struve, of Dorpat, catalogues 3,063 of them.

But this constellation has another double star. Join *Delta Ursæ Majoris* with *Alpha*, and produce the line as far again. This points out "h 23" of the Great Bear, a star of about the fourth magnitude, with a companion of about the fifth magnitude, 23″ (twenty-three seconds) apart. It will require a telescope to separate them.

The extreme star of the third magnitude, in the direction of the nose of the Bear in our map, is *Omicron*. The pair in the highest paw are respectively *Iota* and *Kappa*. The pair in the intermediate paw are *Lambda* and *Mu*. The lower pair, as already said, are *Nu* and *Xi*.

STAR DRIFT.

The wonderful accuracy of astronomical measurement of the position of stars show us that the stars are drifting in various directions. In a hundred thousand years the constellations which Abraham and Moses studied, under nearly the identical forms of today, will become unrecognizable. Eta and Alpha of the Great Bear are drifting easterly, as seen in the early evening of January. Zeta, Epsilon, Delta, Gamma and Beta are drifting westerly at different rates and in different directions. The motion is slow, so slow that thousands of years will be required to make it perceptible to the ordinary human sense—so slow do they cross athwart our vision, only from ten to forty miles per second. Swifter than the fieriest bolt from earth's most tremendous artillery do these Titan sun-world's fly across the calm blue northern vault. The Chaldean astrologers watched their flight in the far distance, but died before they became conscious of their change of position. Generations after generations have since grown up to watch and have passed away, but the flying orbs appear yet nearly in the same position as they did to the eyes of Job. What a speck in the duration of human life, when considered in relation to the dynamics of the skies!

But the spectroscope in the hands of Huggins shows that these motions are not all athwart our line of vision. Some of these stars are approaching us with these tremendous velocities, while others are receding from us. Beta, Gamma, Delta, Epsilon and Zeta of the Great Bear are receding from us at the rate of about seventeen miles per second, as well as drifting westerly. Stars larger than ten thousand worlds, throbbing with liquid lava, shrouded in whirlpools of flame and circled with rabbles of satellites, have been flying towards us from before the time of Adam with a velocity to which that of a cannon ball is but the motion of a snow-flake. And they are yet coming on with unslacked speed. We need hardly fear them. Human life is fleeter still.

Where shall we be
Long before the Dipper's dinted
Or the Great Bear coils its tail?

When it is the astronomer who looks up into the calm blue abysses of the sky—the very emblem of silence—how overpowering the sensation must be of the magnificence of heaven's flaming and dark-orbed artillery! Man lives a life-time ere the distant balls are even seen to change their places, and the awful depths of space swallow up the continued roar of nebular tornados and the thunder of storm-wrapped worlds.

ASTRONOMICAL NOTES.

Venus and Mars were in conjunction on the 2nd inst., and with the moon on the 4th; they presented a brilliant sight to star-gazers. They are in the constellation Capricornus, and will set from 8 to 9 p.m., towards the end of the month.

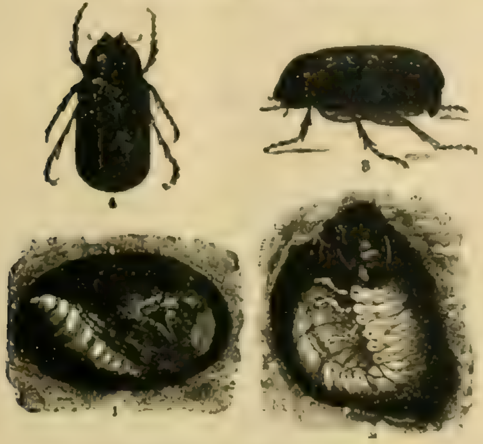
Saturn is in Leo, and rises shortly after seven in the evening about the middle of January. Half an hour later, Regulus, a star of the first magnitude, in the handle of the Sickle, rises. Saturn is now about the point of the Sickle, while Regulus is in the end of the handle, in which positions they may readily be found with a little search.

Jupiter is morning star, rising two hours in advance of the sun, in Sagittarius.

January 18th, Saturn will be in conjunction with the moon. January 26th, occultation of Theta Libræ. January 28th, moon in conjunction with Jupiter. Moon in conjunction with Mercury, February 1; with Mars, February 2; with Venus, February 3; with Saturn, February 15.

FERNDALE SCHOOL.

No. XVIII.—The June Beetle.



Lachnosterna Fusca (Fröhl).

Teacher.— What is this?

Chorus.—The May-beetle — the June-bug — the Cock-chaffer—the May-bug.

T.—Is it a bug or a beetle?

S.—It is a beetle, because it has two hard wing-covers, which are raised up when it goes to fly in order to let the thin flying wings be used.

T.—At what time of the year may we expect it?

S.—About the first of June. In the evenings they fly against the windows, and if the window is open they come in with a great buzzing and fly about, hitting whatever may be in the way, and sometimes get entangled in somebody's head-gear, causing a great sensation, especially if ladies are present.

T.—Very good. It is a beetle, and in this country it generally makes its appearance about the first of June. June-beetle is, therefore, its most appropriate name. Let us describe it. Its length is—

Chorus.—Nearly an inch.

T.—Its color—

Chorus.—Blackish—brownish; its wing-covers are shining brownish black, and its legs tawny yellow, with yellowish hairs.

T.—It flies about—

Chorus.—At night.

T.—They feed upon—

Chorus.—Leaves of trees—the cherry, the plum, the lombardy poplar, the oak.

T.—Now, let us follow its life-history. The female is supposed to place its eggs—which are small white specks, smaller than the head of a pin—between the roots of the grass. When the egg is hatched, what do you suppose the grub feeds upon?

S.—Upon the roots. They turned up ugly white grubs when they were ploughing our pasture land. Were the bugs the larvæ of the June-beetle?

T.—Very probably, but they live in the ground for at least two or three years before they are mature. Figure 2 shows the full-grown larvæ in its burrow beneath the sod, eating the rootlets coming within its reach.

S.—It must live on its back if it is going to browse on the ceiling of its room.

T.—Quite true. Sometimes they are driven out of their burrows by a rain storm, and it is a very strange sight to see them making their way over hard, smooth ground on their backs. They move along by the successive contraction of the rings of the body.

S.—Some of them eat holes in our potatoes in the field.

S.—Some of them were eating the roots of our strawberry plants. The white grub was turned up with the spade just where the roots were eaten.

T.—Very likely; all true. I have heard of a ten-acre pasture having the sod withered and nearly completely severed from the soil below by this grub. But they are not often so numerous.

S.—Won't the frost kill them?

T.—They go down deeper into the earth in winter, and when mature they pass into the pupa stage, figured at 1. This oval little cave is nicely lined with silk. The warmth of May causes the pupa to develop, so that about the first of June the *imago* comes out, and when they are numerous the buzzing noise made by the beetles is something astonishing.

S.—What can be done to prevent their increase?

T.—Man can not do very much more than to turn up the soil and expose the grubs to the view of insectivorous birds, etc. But in addition to the action of wet and freezing weather in destroying them, there is a small four-winged, wasp-shaped fly called *Tiphia*, which places its own eggs in the body of the grubs, which are thereby destroyed.

A fungus looking like two whitish roots or horns are often found growing out from near the head, one on each side, of unequal length generally, and sometimes three, four or even more inches in length. This vegetable parasite appears sometimes to be very destructive to them.

[Note.—At the last meeting of the Institute of Natural Science of Nova Scotia, Mr. Harry Piers exhibited several specimens of the larvæ of *lachnosterna fusca*, from Arichat, Cape Breton, which were affected with this fungus. The two fungous horns were not so long as the dimensions given above. The fungus is probably *Torrubia Melolonthæ* (Tulasne). *Torrubia Taylori*, which grows from the caterpillar of a large moth in Australia, is probably one of the finest examples of the genus. There are several insects known to be affected by certain species of this genus in Central America, South America, West Indies, New Zealand, etc.—Ed.]

HINTS FOR THE SCHOOL ROOM.

A Few Language Devices.

1. Read an easy story and have pupils reproduce it upon their slates.

2. After the difficult words of the reading lesson have been written upon the board and thoroughly pronounced, spelled, and used in statements, allow the pupils to write short stories, using the new words. This is a good test of their ingenuity, and words thus learned are rarely forgotten.

3. Write ten lines, telling how you spent Christmas, New Year's day, or your last birthday.

4. Hang a large picture before the class and call for oral descriptions of the same. Offer suggestions that will cultivate perception and reason.

5. Write sentences upon the board, omitting action words, and have pupils supply. Later, have similar work with other parts of speech.

Receiving Visitors.

1. Receive a visitor politely, and offer him a seat.

2. Make no explanation concerning your work, but go right on just as you would do if no one except your scholars were present.

3. Give your visitor a book, and be certain that he is in such a place that he can see what is going on and hear what is said.

4. Unless on special occasion do not call upon him to make a speech.

5. If you have occasions to introduce him to the school, be certain to have your pupils rise for a moment. This is showing but ordinary respect.

6. If anything is said commendatory or instructive, thank him in the name of the school. It is a poor service, indeed, that does not deserve a simple "Thank you."

7. Don't be fussy, or anxious, or impatient for commendation. Don't ask him how he liked this or that, or fish for a compliment. If you really want to know anything, and have confidence in your visitor's ability, ask him after school is through. Listen patiently and attentively, but do not controvert or oppose. You can do your own thinking and acting. Arguing will do no good.

8. Secure the presence of visitors as often as possible, and let your pupils be accustomed to talk with them on all proper occasions.

9. If a visitor is so impolite as to interrupt a class, and seems disposed to get up a discussion or controversy, stop, wait patiently until he is through, answer politely, but go on yourself. Keep the class in your own hands. If you are driving, hold the reins. Never let a class get beyond your own control. *You* are teacher, and no examining board, county or city superintendent, or president, no one, not even the President of the United States, has any more right to interrupt you than you to interfere or meddle with them.—*School Journal.*

For Friday Afternoons.

The work for this, the last afternoon, may be varied; but avoid getting into ruts. A part of the afternoon may be devoted to an interesting lesson on chemistry, with experiments. A monthly programme like the following, which we take from an exchange, may be used with good effect for several months in succession:

First Week.—Studies and readings in natural history and physical science, with conversations, experiments, songs, and "memory gems."

Second Week.—Health and temperance. Suitable songs and readings; "Bands of Hope," with exercises and conversations.

Third Week.—History studies; readings in local and general history and current events; patriotic songs and recitations.

Fourth Week. Humane education; readings and conversations illustrating deeds of mercy and kindness to men and animals; "Bands of mercy," with suitable exercises.

Ten Rules For Losing Control of a School.

1. Neglect to furnish each pupil plenty of suitable seat-work.

2. Make commands that you do not or cannot secure the execution of. Occasionally make a demand with which it is impossible to comply.

3. Be frivolous, and joke pupils to such an extent that they will be forced to talk back. In this way they will soon learn to be impertinent in earnest. Or be so cold and formal as to repel them.

4. Allow pupils to find out that they can annoy you.

5. Promise more in your pleasant moods than you can perform, and threaten more in your cross moods than you intend to perform.

6. Be so variable in your moods that what was allowable yesterday will be criminal today, or *vice versâ.*

7. Be overbearing to one class of pupils and obsequious to another class.

8. Utterly ignore the little formalities and courtesies of life in the treatment of your pupils in school and elsewhere.

9. Regard the body, mind, and soul of a child utterly unworthy of study and care. Let it be a matter of indifference to you whether a child is comfortable or uncomfortable. Regard it unimportant

why a child enjoys one thing and dislikes another, and that it is not your business to aid him in forming a worthy character.

10. Let your deportment toward parents and officers be such as will cause a loss of their respect and confidence.

One or more of these rules carefully executed will secure the end in view.—*From "Shaw & Donnell's School Devices,"* last edition.

Lessons on Common Fungi.

The teacher instructs the class to get specimens of mushrooms, toadstools, or any thing like them, and bring them to school in the afternoon or next morning. In country places, the scholars coming from a distance of one or two miles, sometimes through patches of woodland or forest, will have a grand opportunity of picking up specimens on the way, and bring them in quite fresh. The specimens are all arranged on the teacher's desk, or other convenient place.

AGARICS (Latin, *Agaricus*).

First, those having caps, with a great number of thin, soft plates on the under side, running out like rays from the top of the stem, are selected. They will include the mushroom and what are called toadstools. There are a great many different kinds of them, but they may be all called *agarics*, or mushroom fungi. Several kinds are good food when properly cooked, but the greatest numbers are good for nothing, or poisonous. The word toadstool may be used for indelible species of mushrooms, but it has no definite meaning. Notice the following points:

1. The stems rise from earth matted together with fine white mold threads. This is called the *mycelium*, or spawn, and is really the body of the fungus. Towards autumn it sent a stem with a cap, which really corresponds to the blossoming and fruiting of flowering plants.

2. The stem may be solid or hollow, and may have the remains of a ring around it, this *ring* being in the early stage a thin *veil* connecting the edge of the cap with the stem.

3. The under part of the cap has hanging from it a great number of ray-like plates or *gills*, called *lamellæ*. The gills are lined with a thin membrane called the *hymenium*, which produce on their surface millions of minute bodies, so small as to be invisible singly—so small that in the most of species it would require four or five thousand to make a row one inch long. These are called *spores*. They are finer than ordinary dust, and millions of them can float in the air without our seeing them. They are the seed.

4. To see the spores without a microscope, in which they appear as very beautiful objects, each different fungus having its own particular size and form, just as definitely as the different kinds of apples and pears.

This plan may be adopted: Cut off the stems close to the caps, and let them rest until next day on white paper. When the caps are lifted off, it will be seen that millions of spores ripened during the night and fell down from the *hymenium* and rested on the white paper in radiating lines. Minute ridges of spores were formed under each gill.

5. It will be noticed that the spores from some species are *white;* from others, *rosy* or *salmon* color; from others, *brown* or *reddish brown;* from others, *purple* or *dark brown*; and from some, *black*. In classifying these fungi, we find that they are conveniently divided, first, into these five groups, distinguished by the color of their spores.

6. The spores are carried away by the wind sometimes to great distances. Very few of them grow to be fungi. If they all did, the world would long ago have been covered with one solid mass of them. But the spores which find a vacant, suitable place, with proper moisture and protection, grow, first producing the mycelium, afterwards the spore-bearing caps or *hymenophore.* (The teacher should never use a strange technical word with the pupil when an English equivalent can be used. Occasionally we use *very common* technical words for the benefit of the teacher who may wish to read up.)

7. Notice that the gills is an arrangement to make the surface bearing the spore-producing membrane (hymenium) as extensive as possible.

BOLETUS (Greek for Mushroom).

1. These are soft and perishable, like the *agarics*, but instead of having gills, the under side of the cap is one mass of minute, vertical tubes. Cut the cap in various ways to prove this.

2. Place the cap on paper for a day, as in the former case, and it will be seen that these tubes are lined with a *hymenium*, which produces spores as abundantly as in the *agarics*. A few of these are edible; some very poisonous.

POLYPORUS.

This word means having many pores. The spores are produced on a *hymenium* lining minute, vertical tubes, as in *boletus*, but the substance is not soft and perishable. They are hard and corky. Very few grow umbrella-shaped. The short stalk is at one side, and they grow generally fan-shaped or horse-hoof shaped. They grow on decaying trees and logs commonly. One common species in woods has a surface like varnished mahogany. Over thirty species are known in Nova Scotia. They keep without any care, and are therefore very good for a beginner's collection or a school room.

HYDNUM.

Possibly a mushroom-like cap may have, instead of gills or porous tubes, soft teeth, spines or tubercles hanging from the under side of the cap. This shows a third way in which the surface bearing the spore-producing membrane is increased. This kind is called a hydnum.

The Agarics may be called *Soft Gill-Caps.*
The Boleti " " *Soft Pore-Caps.*
The Polypori " " *Hard Pore-Caps.*
The Hydna " " *Soft Spine-Caps.*

The teacher must remember that these are only a few of the forms of fungi, but in the autumn their abundance makes them specially conspicuous.

The scholar will also notice that the common edible mushroom belongs to the *purple* or *dark brown* spored gill-caps. The gills are pink and flesh-colored when young, but become brown when older, something like the color of their spores.

A teacher committed a great sin the other day. It was in the chemistry class. The subject was "Oxygen." The book read: "Take a slender watch-spring, bind a piece of match to one end of it, set fire to the match, and slowly lower it in a jar of oxygen. The burning wood heats the iron until it takes fire and burns with surprising brightness." A pupil recited it *verbatim.* The teacher said to another pupil: "You may recite what is said about the burning watch-spring?" Pupil recited. "Next may recite what is said about the burning copper wire." Next recited. "Next recite about burning phosphorus." Next recited. "Next tell how oxygen is obtained." Next told how oxygen is obtained, and so on. "Next." "Next." "Next," to the end of the recitation. "Good recitation; you may take Chlorine next time. Dismissed." Did it occur to those pupils that they would like to obtain oxygen and try these experiments for themselves? Yes, in a far-off way, just as they have a dim thought that some time they may see Jerusalem, but it is only a thought, a hope, a feeble expectation. What sort of a teacher is this? One among ten thousand members of the same great army. Some one whose eyes are opened says, "Is this possible?" Yes, my friend, it is not only *possible,* but *actual.* Chemistry is recited—not taught—his way in this country, *and it is a sin.—N. Y. School Journal.*

[We hope there are few, if any, such sinners in chemistry among our teachers.—ED.]

THE INTERPROVINCIAL CONVENTION.

The Primary School Section of the Interprovincial Convention met in the hall of the Centennial School, St. John, on Thursday, July 19th, and was attended by about 250 teachers. Miss Lewis, of Truro, read a paper favoring the kindergarten methods in primary schools. The introduction of such methods is the soul of the new education. To train the hand as well as the head; to give beautiful surroundings to the child, and to teach from these; to unfold the nature of the plant from growing plants in the room; to teach the beauties of literature from simple extracts committed to memory day after day; to draw from objects, to give pleasant and profitable employment to busy fingers and brains, are alike kindergarten and primary school methods. Modelling in clay, taking part in games and other kindergarten methods should enter more largely in primary school training.

The ends which the kindergarten seeks—namely: The education of the senses; the training of the faculty of speech; the exercise of the creative powers; the development of manual skill, delicacy and power; the promotion of bodily health by physical activity; the stimulation of imagination and reason; the formation of habits of attention, concentration and obedience; the gentle insistence upon good manners, kind words, generous deeds; the reverent thoughts of God, and God's universe. In which of these is the ideal school wanting? Not one. Then why draw the line between kindergarten and school? It must be evident that the principle of the kindergarten system, which so admirably combines thinking and working, is not limited to infant education. The structure reared must rest upon and accord with the foundation laid, and as the child advances from seven to twelve years of age and upwards, the teacher has but to supply the means of progress in knowledge suited to the requirements of the children; books are then used by them with intelligence and interest, and in the development of their growing capabilities they will be successfully taught to teach themselves.

Miss S. J. Sullivan, of the Morris street school, Halifax, read a paper on "Social Instincts as a Factor in Character Building." It was an admirable presentation of the qualities and disposition that make up the child's nature, with thoughtful suggestions how to best mould this nature and make the individual what he ought to be. A child should be taught to distinguish right from wrong by precept and example. But teaching alone will not suffice. His moral training must go deeper than that. That which is done for a child does not educate him, but that which he does for himself. Proper exercise of any power of the mind strengthens that power, and the entrance of evil is more effectually prevented when a child has been taught to know the right and do it, resisting temptation, than where he has been shielded in every possible way. We have a right as teachers to take satisfaction in the progress made of late in methods, and the consequent improvement in the popular sentiment towards the public schools. Our calling affords us unbounded opportunity for investigation and study and makes us influential in moulding human character. In seeking to make a good school, we should seek with all our energies to make good men and good women.

Character Building, on its moral side, was treated in a skilful and comprehensive manner by Miss McPhail of the Davies street school, Summerside, and by Miss Murphy of Portland, St. John.

Miss H. Adam, of the Victoria school, St. John, read a valuable paper on "Faults of Temper and How to Deal with Them." As teachers, said Miss Adam, we should remember, in dealing with the moral character of our pupils, that each child is subject to certain faults of temper, which, if not subdued, will become a barrier to all success and happiness in after life. Then, should it not be the first duty of every teacher to ask himself or herself the question, "Are my own faults of temper and disposition sufficiently controlled to enable me to help the children, by my example, to conquer their various moral weaknesses? For precept, unless accompanied by example, goes very little in guiding and shaping the young life. There are several faults of temper which are noticed particularly among children, and sometimes in those of riper years; but those most frequently met with are obstinacy, violence, peevishness and querulousness. The characteristic of obstinacy we must be careful to distinguish from that of firmness of purpose. The latter denotes that we are not easily swayed by the opinions of others, while the former causes us to ignore entirely the advice of others who know better than we do. Where obstinacy is shown by a scholar in defying the rules of the school, and trying to lead the other pupils to do the same, the teacher's best plan is to gain the respect and love of the scholars as a body, and thus make the offender feel that he cannot continue in his opposition. But, if the pupil seems obstinate, when really his trouble is rather mental weakness, then the teacher's sympathy and kindness will be the best means of gaining control over the child. Violence or hastiness of temper should be treated with calmness and earnestness on the part of the teacher, and the child should be led to see that he may have serious trouble in after life if his quick temper is easily allowed to become his master on every slight provocation. Peevishness may arise from a weak constitution, and, if so, the child should be kept from provocation as much as possible; but if he is strong and healthy, his peevish nature will be best overcome by associating with others, and seeing how much more happy he may be by showing an agreeable disposition than by being peevish and discontented. To help the children to overcome a querulous or complaining disposition, the teacher should not listen to every little complaint brought to him by his scholars; and, unless there is real cause for complaint, the children should be taught to bear little trials bravely, so that they may be more able to bear the greater trials of after life. But, in trying to shape the character of our pupils, there is a power, without whose help all our efforts fail. The children should be taught from their earliest years the truths of God's word, and that the commands of their Heavenly Father are far more to be held in reverence than those of earthly parent or teacher. If the child has in his heart the influence of God's spirit, and the teacher seeks to be guided, at all times, by the great Teacher of teachers, then the true foundation of moral character will be laid, and faults of temper be fully overcome.

THE RECEPTIONS.

In response to the invitation of His Worship Mayor Thorne, a number of prominent citizens, including Sir Leonard Tilley, attended at the city building between 11 and 12 o'clock on Thursday, July 19th. They were there presented to Sir William Dawson, Dr. J. G. Fitch, Professor R. G. Huling and Colonel F. W. Parker, and the leading educationists of the Atlantic provinces. A pleasant half-hour was spent in conversation.

In the afternoon, between 4 and 6 o'clock, a reception was given to Sir William Dawson by the New Brunswick Natural History Society. The ample rooms of the society were beautifully decorated for the occasion, and were filled to their utmost capacity by a thoroughly representative audience, embracing visitors from abroad as well as ladies and gentlemen from nearly every city and town of the three provinces.

Mr. Geo. F. Matthew, president of the society, called upon Sir Leonard Tilley, governor of New Brunswick, as patron of the society, to preside. In doing so, His Honor spoke in terms of warm approbation of the society and its work. He also paid a heartfelt tribute to the high character of Sir William Dawson and the distinguished services he has rendered to science. Sir William gave an interesting address, in which he reviewed the work of the society and its results.

[For the Review.]

A Visit to the Five Points House of Industry and its Kindergarten.

We arrived just as school was let out, and watched from an upper window the frolicsome play of the children—several hundred—in their large, paved playground. Remembering what this part of New York was when Rev. Mr. Pease founded the institution, in 1850, our heart swelled with gratitude as we contemplated the results. First, a refuge, furnishing a home and work to wretched, sinful women who wished to live honest lives, it soon became a day-school and asylum for children. It began with thirty or forty women; to-day, over *four hundred* adults and children form its large household. Its average cost is one hundred dollars per day, and, while it receives a share of the school funds of the city, it is largely dependent on voluntary contributions. Thirty-nine thousand children have enjoyed the privilege of its well graded school, and there have been over twenty-six thousand inmates. Nearly three hundred children sat down to a comfortable dinner the day we were there. Not all belonged to the large family, for they feed destitute ones who are only day scholars. Those who enjoyed the privilege of the home were quite easily picked out, from their superior cleanliness and more healthful looks, the result of systematic care, diet, bathing. The children, when old enough, take their part in useful work, the girls learning to perform skilfully domestic offices. We accepted the cordial invitation to dine with the superintendent and teachers. The table was well set and the cooking good. The girl who set the table and the one who made the pudding, neither over fifteen years old, were introduced to the stranger, and received blushingly the compliment fairly earned by their skill. After dinner we visited every department of the school. It was a two-fold pleasure to visit the kindergarten, for it was not only delightful to see the little creatures made happy and deft-handed, but it was such a triumph for Frœbel's principles and methods, because you felt that nothing else *could* do so well the work of training and instruction that these little waifs and strays needed; taken so early, treated so tenderly, and helped in the all-embracing atmosphere of love and purity, native to an efficient kindergarten, you could reasonably hope that any avoidable heredity being neutralized, these children will become good citizens profitable to the state. Their manners were as nice and their handiwork as neat, and they were as friendly and confiding as any curled darling of fortune. They sang "Thumbkin says I'll Dance and Sing," and other little songs with evident enjoyment, making the appropriate motions. One class, with little sticks, was laying the farmer's house, his barn and fowl house, and then telling about the creatures on the farm, how they acted, what their color and what their uses. One made a pigeon-house and showed the movements of the birds, their swift flight and pretty little odd ways in childish mimicry. Some drew on the black-board, some on slates, others made geometric patterns with colored paper, cut in different shapes, gummed on white sheets of paper. Some very little ones had a play with the ever-pleasing balls of the First Gift. The furniture was good, the material abundant and the teacher competent. As a foundation, conceded to be indispensable to manual training, the kindergarten occupations are also taken in the primary grades, with the usual happy results of making the pupils observing, careful, industrious and thoroughly in love with their work. Some little children in more favored localities, pining in weariness for suitable employments, might well envy the contented, busy children, who, in this well-conducted institution, enjoy the benefit of Frœbel's "latest thought,"—the kindergarten.

C.

THE DISTRICT AND SCHOOL.

Before leaving the subject of the "School District' and taking up that of the "Teacher," it may be well to briefly deal with one or two vexed questions which are continually arising in country districts. It is very advisable that teachers should give some attention to these matters, as in any case in dispute the teacher's opinion is very often asked and trustees' action is frequently based upon the nature of the advice thus given. The teacher's influence should always be exerted in the direction of allaying contention rather than in stirring up strife.

What steps should be taken to cause a secretary or other person to give up school property improperly withheld?—This is a very common and oft-recurring difficulty, and one that has been the cause of many an action at law. It often happens that the secretary, out of pique at his removal from office, or having some real or imaginary claim upon the trustees, refuses to give up the books, money, etc., belonging to the trustees of the district. In a case like this, the trustees, or a majority of them, should either go in person and make a formal demand for the papers or send a written order. If this demand is not complied with, any ratepayer can make affidavit to the facts and send it to the inspector, who is required to summon the party improperly withholding the school property to deliver it to the trustees within a certain time. If a refusal is still given, the matter passes into the hands of a county court judge, who, on proof of the facts alleged, may either deal summarily with the case or make such order as may seem to him proper, with or without costs. It may be that the secretary has a well-founded claim against the district. If so, he is in no way justified in offsetting it by illegally holding the school property. He has his remedy after giving up the papers, just the same as before. At any time, save after the annual meeting, when the accounts are supposed to have been audited, it is advisable for the secretary, before giving up the books, to have them audited.

Can the district school house be used for any other purposes than school purposes?—This is a much debated question. It is thought by many that a majority of the people in the district can rule in this matter, and by others that the consent of the trustees, or a majority of them, is sufficient. The best informed in this matter concur in the opinion that the school house is held in trust by the trustees to be used for school purposes only. Any other solution of the matter would be fraught with danger in many districts where sectarian feeling is strong and where the house is used for religious purposes. At the same time it often happens that the school house is the only available building for holding religious services and other meetings, and any deprivation of its use would entail hardship and cause discontent. Where there are no objections raised in the district to so using the school house, it is perhaps not advisable to depart from the usual practice prevailing in the past; but it is always advisable that the trustees should obtain the names of parties willing to become responsible in case of any damage being done to school property.

The former articles on this subject have been very interesting, no doubt, to many of your readers. In the next issue a series on the "Teacher" will be begun.

[To be continued.] C.

Inspectoral Notes.

Inspector Carter will visit the schools in the western part of St. John County and the eastern portions of Charlotte County, N. B., during the months of January and February.

Inspector Smith will enter upon his inspection of the schools of Albert County, N. B., this month, beginning with the parish of Alma, thence to Harvey, Hopewell, Hillsboro and Coverdale.

Mr. E. L. O'Brien, of the N. B. Normal School staff, has been appointed Inspector of District No. 2, embracing the counties of Kent, Victoria, Madawaska and a portion of Carleton, N. B., in place of Mr. Boudreau, resigned.

Means to Ends.

Every one who has given any attention to the work of the common district schools of his country, if no course of study has been followed, knows that they are wofully deficient in gradation and organization, due to the fact that they have been without any systematic plan of work, and that no record has been kept of the standing or advancement of the pupils.

One of the greatest evils in our country schools is the constant change of teachers. In the absence of any course of study in the schools, each teacher is free to arrange a course of study to suit himself, and each change of teachers brings also a change of plan in the school; pupils "are turned back" to pass over the same ground, term after term, until they lose all interest, and not infrequently contract a positive dislike for school and school work—hence this great irregularity of attendance in our country schools.

These evils may, in a large measure, be avoided—by placing in the schools a carefully arranged course of study, and requiring a record of the progress and standing of each pupil. The defective work in the country schools is not so much due to the incompetency of teachers or to neglect on their part, as it is to the absence of any *system, incentives, or end in view.* The Course Study provides for a number of years' work for each pupil (who can be promoted as he progresses), *and, as an incentive for faithful work, presents a definite end to be reached.*

A Gifted Mayor.

The Hon. Charles D. Jacob, Mayor of Louisville, Ky., has enriched English literature by the issue of a legal document, that is the most original and unique ever published. In the course of his duty as mayor, it devolved upon him to issue a proclamation announcing to the public the passage of an ordinance by the City Council, prohibiting under specific pains and penalties, the running at large of horses, mules, cows, sheep, hogs and goats in the city of Louisville. Not being familiar with the legal phraseology that is usually employed in the drawing up of such documents, he wrote out one which he considered most suitable for the occasion, and here it is:

> "No more, as the 'curfew tolls the knell of parting day,' will be witnessed the poetic, but unbusinesslike procession of 'lowing herds winding slowly o'er the lea,' marching steadily and triumphantly upon the green swards and parterres of brilliant flowers belonging to defenceless citizens. A thing of the past will be the insolent goat that, stalking with odorous tread, has bidden defiance to trembling mortals. Nevermore, 'fleece as white as snow,' will Mary's little lamb follow her to school, but, as 'a tender grace of a day that is dead,' will it linger, a sad, sweet idyl in the mind of the 'oldest inhabitant.' Henceforth the exotics of the rich will 'flourish as a green bay tree,' and the poor man will not have to lessen his already scanty means by building stockades to protect his little ones from roving bands of beasts."

We doubt whether there is to be found in the

English language another official document that for poetic vigor and picturesqueness of expression can be compared to it. The people of Louisville should be proud of their mayor who has shown that he is well able to draw up a republic proclamation that will afford them both pleasure, amusement and information to peruse.

Importance of Attention.

It ought, indeed, to be absurd in these days to spend time in saying one word about the importance of attention. Never before in the history of education has there been half the interest among teachers in the study of psychology as at present. To say to a farmer that he must prepare his ground if he expects a crop of corn, to a merchant that if he expects to get a living at his business he must have goods to sell, ought to be no more absurd than to tell any teacher who has the most rudimentary knowledge of psychology of the pre-eminent importance of attention. But so long as we hear of teachers violating every law of attention—talking to their pupils in a dull monotonous way without looking at them—seating them during recitation where only a part of them can see the teacher—conducting a recitation so as to give to pupils no motive to attend beyond the interest naturally excited by the subject—giving explanations without taking any pains to see that their explanations are comprehended—as long as we hear of these things our readers must give us the liberty to insist on the importance of attention. GET THE ATTENTION OF YOUR PUPILS. IF YOU CAN'T DO IT, CHANGE YOUR OCCUPATION.—*Journal of Pedagogy.*

MANY of the evils complained of in examinations, says the *School Guardian,* might be easily remedied by more judiciously framed questions. Too frequently examiners encourage the very evils which, in their reports, they are foremost to complain of. They ask for "cram," and they get it; they demand universal knowledge, and such a knowledge is affected; they ask for "the three causes" of this and the "six phases" of the other, and the "causes" and "phases," neatly disentangled, numbered, and lettered, are supplied. The proper remedy for "cram" is to set questions that "cram" will not answer. It is much to be regretted that persons are often appointed as examiners who know little about either the science and art of education, or about the conditions under which the candidates are prepared. An examiner ought to know what may be reasonably expected from candidates, and the best ways of gauging real knowledge and real power. As a rule, we would advocate the testing of power, in preference to the testing of knowledge.

READING.

A Charlottetown correspondent, "A. B. W." whose initials are already known to readers of the REVIEW, sends us some timely remarks on the value of good reading. We regret that we can only find space in this issue for a portion of the letter of our esteemed correspondent:

....The learner must thoroughly understand the passage he is practising on before he can read it intelligibly. The application and exercise of the thinking faculties necessary to obtain this understanding are in themselves a first-rate means of gathering knowledge and of developing the mental powers. The pupil who has carefully thought out all the meaning to be found in a fine passage from a good author, has taken a long step towards acquiring an education, and, what is of greater moment, has done much towards developing and disciplining the mind, and so fitting himself or herself to fight life's battle in future years. Moreover, the taste for work of this nature very rapidly grows; it soon ceases to be a labor, and becomes a pleasure. In time the mind, trained to think in this way, is able largely to follow the eye, and as the words of the printed page strike the sight, the understanding grasps the meaning and the cultured voice naturally and clearly conveys it to others. Some having greater natural gifts than their fellows will excel, but almost all can attain to a respectable degree of proficiency. It is just as in music. The trained eye catches the notes on the printed sheet even when seen for the first time; the skilled fingers transfer them to the instrument, and the result is melody varying in beauty with the skill of the performer.

Does this branch of learning receive sufficient attention in our schools and colleges? In how many is any careful and systematic training given? Would it not be profitable, both to teachers and taught, even in the most elementary schools, to devote to it considerable time? For my own part, I think one, or, better, two days in the week specially set apart for this class of work would be time well employed, and in the higher seminaries of learning I see no reason why degrees in this art should not be conferred as well as in kindred subjects.

Walking on the Water.

C. W. Oldreive lately accomplished the task of walking on the water of the Hudson River, from Albany to New York. Distance about 150 miles, wager $500. His average progress was twenty-four miles a day. He always went with the tide.

The shoes he wore are made of cedar, lined with brass. They are five feet long and a foot wide. Each is air tight, with a space in the centre for the foot. On the bottom are three fins, so arranged that when the shoe moves forward they are pressed up against the bottom, and when the shoe is at rest they hang downward, like paddle wheel buckets.—*Scientific American.*

INSPECTOR LAY TO THE TEACHERS.

[Continued from Inspectors' Department, pp. 152, 153.]

Teachers will please remember that the work in physiology begins after vacation with Section 26. I will again repeat the proposed division of the work, beginning with first week after vacation:

1st week	26, 27.	2nd week	28, 29.
3rd "	30, 31.	4th "	34, 35.
5th "	36, 37.	6th "	38, 39.
7th "	40, 41, 42.	8th "	43, 45.
9th "	46, 47.	10th "	48, 49.
11th "	50, 51.	12th "	55.
13th "	56.		

In the second week's work put the diagrams on pages 59 and 65 on the board, and make the pupils thoroughly familiar with them. Illustrate shape of valves of heart by cutting paper diagrams, and their action by the valves of a pump. Confine water in a rubber vessel (the sleeve of a waterproof will do), and show the effect of pressure on it to illustrate the force that moves the blood from the heart, then let pupils apply this illustration to a hollow vessel, the heart filled with a liquid, and squeezed by the muscles. I think you will find no difficulty with the help the test gives to show how the contractions of the heart are repeated in the arteries and the result. You might try the experiments with salt, sugar, etc., in a bag of fine silk, if you cannot get animal membrane. In a future issue of this paper I will give some hints on lessons of 5th and following weeks. Give ten-minute lessons three times a week. Give simple lessons on health for the remaining days, abridging and simplifying those in 5th reader. Begin with Sec. 26 in Primer, whether previous work is completed or not. Your friend,

E. J. LAY.

We clip the above from the Amherst *Gazette.* It illustrates what appears to be a very effective method of working up the schools of an inspectorate in any particular department.

THE EDUCATIONAL INSTITUTE OF NEW BRUNSWICK.

The Executive Committee met in the Library of the normal school, Fredericton, on Thursday evening, 3rd January, inst., for the purpose of making arrangements for the next meeting of the institute. More than two-thirds of the members were present.

It was decided to convene the institute on the last three teaching days in June, the first session to open on Wednesday, June 26th, at 2.30 P. M. The last three meetings having been held in St. John, the Chief Superintendent has named Fredericton as the place this year.

On the first evening there will be a public meeting for platform speeches by prominent persons. During the six sessions on the Wednesday and Thursday, it is expected that papers will be read on the following subjects:

1. Compulsory attendance at Schools.
2. The Superannuation of Teachers.
3. Composition and Critical Reading, vs the Formal Teaching of English Grammar.
4. Public School Education—its relation to the political social and moral tendencies of the times.
5. Is the Common School meeting the Demand for Practical Education?
6. What Provision might be made for Technical Education in this Province?
7. The Common School Teacher—his qualifications, his duties and his rewards.
8. A Programme of School Work for Friday afternoons.

Persons were appointed to prepare papers on these subjects, and others to open the discussions thereon. The details of the arrangements for the institute were delegated to a sub-committee.

SCHOOLS FOR MINERS.

An effort is to be made to give practical scientific instruction to such of the workmen now employed in the coal mines as are anxious to improve their condition, and are willing to avail themselves of such facilities as may be afforded. For this purpose the Nova Scotian government have decided to establish seven schools of instruction in the various coal mining districts of the province. The places at which these schools are to be established and the teachers who are to conduct them are as follows:

1. Chignecto Colliery, Maccan, Cumberland county; teacher, Mr. James Baird.
2. Springhill Mines, Cumberland; teacher, Mr. Robert Redpath.
3. Thorburne, Pictou county; teacher, Mr. A. D. McKenzie.
4. Sydney Mines, C. B.; teacher, Mr. Robert Robson.
5. Gowrie Mines, Cow Bay, C. B.; teacher, Mr. Robert Anderson, councillor.
6. Victoria Mines, C. B.; teacher, Mr. John Weir.
7. Bridgeport, C. B.; teacher, Mr. Robert Campbell.

Schools will be opened at other places if it is found that the workmen require them. The instruction will probably be given as a rule in the evenings, so that the work of the men may not be interfered with. The teachers are to receive an allowance from the government for conducting the schools, and a further allowance for each person prepared by them who successfully passes the board of colliery examiners as an underground manager or overseer. No fee is to be charged to the men. There is much need of more skilful workmen in the mines, and there can hardly be a doubt that, if the colliers avail themselves of the facilities that are to be offered, the results will be beneficial to them and to the companies as well.

Meeting of the Frœbel Institute.—The annual meeting of the Frœbel Institute of Nova Scotia was held in the Province building on the 3d inst, the president, Mrs. Condon, in the chair. Among those present were Inspectors Condon, Roscoe and Lay, Supervisor McKay, Principal McKay, Dr. Hall, Dr. Hibbert Woodbury and Principals Kennedy and Congdon. Several ladies interested in kindergarten culture were also in attendance. Dr. Hall gave an account of the lectures on Frœbel's system delivered to the normal school pupils by Miss Woodcock, and expressed his satisfaction at the deep interest shown by the pupils in their visits of observation to the kindergarten, and augured the happiest results. Mrs. Patterson and Miss M. A. Hamilton have completed the course, but are still, with laudable ambition, working in connection with the kindergarten. Two other ladies, also teachers, are now taking the full course. The school board of the city of St. John sent Miss Orr, of Victoria school (a very able teacher in the primary department), to take a month's training and observation in the model kindergarten. This lady is illustrating in a marked manner the practical benefits of the short course specially designed for teachers engaged in active work. Principal Hay writes that she is introducing Frœbel's practice into her department most efficiently, so that those who sent her feel amply repaid for the expense they incurred. Principal McKay hoped soon to see the kindergarten established in every town in Nova Scotia in connection with the public schools. A general discussion took place as to the best means of bringing this about, and it was shown that much had been done towards this and by the arrangement entered into by the government, whereby regular instruction in Frœbel's principles and systematic observation of the well-conducted kindergarten forms part of the training henceforth of every pupil-teacher at the normal school. It was felt and expressed that the people of Truro deserved great credit for the spirit and determination with which they had supported the kindergarten at a large pecuniary outlay.—*Hx. paper.*

The scholarships vacant for the next year of the N. B. University will be those for Restigouche, Gloucester, Kent, Westmorland, St. John, Queens, Albert, York. Teachers of superior and grammar schools throughout the province should keep this list as well as the advertisement of the university, printed in another column, posted up where their scholars may see it. It will stimulate to effort in the direction of the higher education.

EDUCATIONAL OPINION.

"It is strange to observe how indifferent the public generally is to the best and soundest work being done in its midst."

This is what the Rangoon *Gazette* says of the work of missions in Burmah. But the same may be said, for instance, of our common school work. While politics and trade receive every attention the formation of educational habit, of moral tone, of practical skill in the great mass of children who are to be the people of our country, awaken but little enthusiasm. The papers of a city like Halifax, being unable to see outside of Halifax, are ready to devote any amount of space, to use any means, fair or unfair, to aid a Halifax college, but they seldom try to arouse the public to the far greater importance to the country of the common schools of the province. It is encouraging to know that the teachers themselves are interested in the work, as is seen by the holding of their conventions, of their school of science, their support of educational periodicals, and in other ways. At the late convention in St. John the minister of finance urged that the teachers should receive larger salaries as a fair return for their important services, and that a longer vacation should be given in the summer, both to give opportunity for self-improvement in the teachers, for rest and recuperation, and for the advantage to the health and vigor of the pupils. All these recommendations are in the best interests of the country at large.—*Windsor Tribune.*

"It ought to be that as young men grow in the knowledge of literature and science they should form those habits which contribute to their happiness and usefulness, and which tend to strengthen the state. A collegiate or any other education which fails in this is faulty at the most critical point ... The lives of Arnold and Thring were devoted quite as much to the making of men as of scholars. The results have justified the wisdom of their plans, and should be a model for more general imitation."—*Woodstock, N.B., Press.*

"We make the statement emphatically that there is no portion of the Dominion more favorably situated for the development of manufactures than the Maritime Provinces; and this being the case, the education of our youth should be so conducted as to develop the love for industrial pursuits, and to properly train those who have the natural abilities to become skilled workmen in any industrial calling.—*Hants, N. S., Journal.*

EDUCATIONAL NOTES.

By a recent resolution of the Board of School Trustees of Moncton, N. B., only those who hold a first-class license can be appointed to positions on the teaching staff of that town.

More than 12,000,000 children attended the public schools of the United States some part of the last fiscal year, and of those nearly 8,000,000 were in average daily attendance. In both respects the southern states have made greater progress than other parts of the country.

The Nova Scotian government are not neglecting educational interests. The fine normal school building has been thoroughly freshened up with paint; the walls and ceilings of the class-rooms, assembly-room and halls are things of beauty. The electric light has been introduced for evening lectures.

Evening lectures once a month by prominent educationists is in contemplation for the current term in the Provincial Normal School of Nova Scotia.

Miss Griffin, of Massachusetts, has been engaged as teacher of music and elocution in the same institution. She will teach sight-singing and musical theory in accordance with the Mason system, so called—viz., that system used so generally throughout the U. S. A.

The faculty of the N. S. Provincial Normal School gave a charming "at home" to the students of the school and invited guests from Truro and elsewhere just before the vacation. Dr. Allison, superintendent of education, was present, as was also Miss Jennie McGarry of the Ladies' College, Halifax.

AMONG THE COLLEGES.

The students of the University of Dalhousie have presented the venerable Dr. Lyall, professor of logic and psychology, and author of "Intellect, the Emotions and Moral Nature," with a horse and carriage to carry him to and from lectures.

The Dalhousie *Gazette* pays a very high tribute to President Forrest of Dalhousie, as the founder and persistent financial support of the gymnasium, which now, after eight years' heavy indebtedness, is more than self-sustaining. A university of athletes gives promise of future common school physical training.

Acadia College closed for vacation with the "annual rhetorical exhibition of the junior class" in College hall before a large audience.

Truro Academy has made an average of 70 since the beginning of the present term. This is by far the largest attendance in its history. A number of the pupils are taking up advanced work preparatory to matriculating into college. Already the standard of work being done there has been recognized by Dalhousie University, and hereafter students who have completed a full academy course will be admitted to that university without further examination. Truro is thus placed on the same level with the best academies in the province.

The General Council of Medical Education and Registration of the United Kingdom has decided that the examination for a degree in Arts of the University of Mt. Allison College, New Brunswick, be recognized and added to the list of preliminary examinations accepted by the council. This will admit Mt. Allison graduates in the future to all medical schools in the United Kingdom without passing any preliminary examination.

Pictou Academy closed with the "annual Xmas concert" in Convocation hall before an audience of four hundred.

It is not generally known throughout the provinces that St. Francis Xavier College, Antigonish, has lately moved into new, extensive and elegant quarters. The new building is spoken of as being very commodious and attractive and in keeping with the advance in educational accommodations in the most progressive centres.

PERSONAL NOTES.

Mr. E. M. Brundage has given up the school at Grand Harbor, Grand Manan. Mr. Moore succeeds him.

Miss Annie Adams, late of the Grammar School, Shediac, and Miss Ella Veazey of St. Stephen, both Class I. teachers, have been appointed to positions on the Moncton, N. B., school staff.

Thos. McGarrigle, A. B., Principal of the Lower District Schools, Chatham, N. B., has resigned his position, and leaves for Vancouver, B. C., this month. Mr. McGarrigle received many testimonials expressive of the esteem in which he was held by his pupils and their regret at his departure from them.

In the October number of *Mind* is an article on "A Basis for Ethics," by Dr. S. W. Dyde, of the University of New Brunswick.

J. S. Trueman, B.A. (Dalhousie), of Carleton, N. B., has been awarded a classical fellowship at John Hopkins University, Baltimore.

Miss Clara E. Bridges, of Fredericton, has been appointed to a position on the staff of teachers in the St. Stephen, N. B., schools, caused by the resignation of Miss Sands.

Prof. M. Ingres has established a branch of the Berlitz Schools at Woodstock, N. B.

The Grammar School at Woodstock, N. B., under the principalship of R. P. Steeves, M.A., is steadily increasing in efficiency.

Mr. Walter A. Taylor, A. B., of Carleton, N. B., (Mt. Allison) has recently gained a fellowship at Harvard University, worth $300.

Mr. W. H. Matheson has retired from the school at North Bedeque, P. E. I., and has been succeeded by Mr. A. D. Fraser.

Inspector Bridges will visit the parishes of Stanley and Douglas, in York County, during January.

QUESTION DEPARTMENT.

W. J. W., St. John.—In the question department of your issue for December, I notice you state that "*Gordius* belongs to the family *Gordiacea*, to the order *Cœlemintha*, to the class *Annulata*, to the province *Articulata*." While Packard, in the last edition of his *Zoology*, (1888,) states that *Gordius* belongs to the family or sub-order *Gordiacea*, to the order *Nematodes*, to the class *Nematelminthus*, and to the branch *Vermes*. He places *Vermes* below mollusca, while in Cuvier's division, *articulata* is higher than mollusca, in the scale of animal life. It is puzzling to a beginner to find authorities differing so widely. Perhaps the Review can throw some light on the subject.

Ans.—The classification of *gordius*, given in the last number of the Review, is that of the first edition of Sir Wm. Dawson's Hand-book of Zoology. In his last edition he simply breaks up Cuvier's province, *Articulata*, of his first edition into the two provinces *Arthropoda*, (spiders, insects and crustaceans,) and *annulata* (worms and worm-like animals). Nicholson's Manual of Zoology, a standard text-book in the leading British universities, depresses *gordius* even lower than Packard, and places mollusca at the head of the invertebrata. We quoted Dawson's hand-book as it is, specially adapted to our Canadian fauna, and is more elementary in its outline. It is the text-book adopted by the N. S. Summer School of Science in Zoology, and we presumed the one most likely to be generally used by young Canadian students.

The cause of this disagreement in classification which is so puzzling to the student who refers to more than one system, is due to the fact that Zoologists attempt to put in a *linear* series, organisms, which stand related in a manner which could be better expressed in a series of *three dimensions*, or in a zoological tree. Attenuate this tree into a line and you will have to toss for the precedence of the articulata and mollusca. While some of the mollusca are very complexly organized, some of the insects are, in many respects, apparently nearer the vertebrata, and the worms are placed next them on account of their close resemblance to the larval forms of the insects, although the worms generally are very conspicuously of lower organizations than the mollusca. Nicholson would classify *gordius* as follows: *Genus*, gordius; order, gordiacea; division, Nematelmia; *class*, Scolecida; sub-kingdom, annuloida. When not otherwise specified, the Review will use Sir Wm. Dawson's classification, not on account of any supposed superior merit in his system of classification, which, nevertheless, has the support of some of the greatest of zoologists, but on account of its elementary and concise form combined with its special reference to Canadian forms of animal life.

W. M. G., Jeddore.—Please find some specimens marked W. M. G. in a parcel, and please determine what they are. They came from the top of a rock named Gibraltar, about 600 feet high, at the extreme north of Meagher's Grant. It is a scrub about ten feet high.

Ans.—It is *Pinus Banksiana*, Lamb., which is *Pinus rupestris*, of Michaux. The French, in Quebec, Gallicize Michaux's name into *Pin des rochers*—the "the pine of the rocks." It is generally known in English as "Banks' pine," the "Gray pine" and the "Scrub pine."

J. M. C.—Correct. The white, *Arsenopyrite;* the variegated, *Bornite;* the black, *Cassiterite,* (Tin ore—the oxide). "Sulphurous" fumes in latter, if present due to some extraneous matter.

LITERARY NOTES.

A Compliment for the University of Dalhousie, Halifax.—Professor MacGregor's lately published text-book on "Kinematics and Dynamics" has been adopted as the basis of a course in the University of Cornell.

Professor Alexander, of Dalhousie, is reported to be preparing a volume for publication. It is said to be an introduction to the study of Browning.

Teachers of English literature will be glad to learn that Mr. A. J. George, who edited *Wordsworth's Prelude* so acceptably, has in preparation to be published early in 1889, Selected Poems of Wordsworth, comprising lyrics, sonnets, odes and narrative poems, such as are requisite for a thorough understanding of the genius of the great poet. It will be published by D. C. Heath & Co., Boston.

The Story of a School" is the simple title of an article by the late Prof. James Johonnot, to appear in the February *Popular Science Monthly*. It is an account of the remarkable success achieved in conducting a normal school according to natural methods, arranging the subjects of study in their order of dependence, teaching science by observation, language by using language, mental and moral philosophy objectively without books, and with no marking system, rules of discipline, or distinctive religious exercises.

BOOK REVIEWS.

We are indebted to Prof. A. B. Seymour, of Harvard University, for the report of the Section of Vegetable Pathology for 1887, and Bulletin No. 7, both from the Department of Agriculture, Washington. Both contain valuable illustrated articles, descriptive of fungi injurious to vegetation.

Manual Training, No. 1.—Thompson. D. C. Heath & Co., Boston, New York & Chicago. Every teacher having primary pupils should have this little work. It is altogether practical, and just what is required to lead the teacher.

An Illustrated Primer. By Sarah Fuller, Principal of the Horace Mann School for the Deaf. D. C. Heath & Co., 1888. This little volume of some 100 pages contains several hundred outline drawings, illustrating words and sentences. It was prepared specially for the use of the deaf; but we have found it most interesting and useful as a general primer. It also serves as a capital guide for outline drawing of the most familiar objects, and is also a fascinating and valuable book for the tyro reader.

Early Training of Children. By Mrs. Frank Malleson. Boston: D. C. Heath & Co., 1887. A volume of some 120 pages. It is well printed in large clear type. The subject is plainly and forcibly treated. Mothers, nurses and all having the control of young children, will find the work very suggestive.

Historiettes Modernes, by C. Fontaine, B. L., L. D., Professor of French, Washington, D. C. Publishers: D. C. Heath & Co., Boston. This is a collection of interesting stories and sketches, accompanied with notes, well adapted to familiarize young students with modern French literature.

Methods of Teaching Arithmetic in Primary Schools, by Larkin Dunton, LL. D., Head Master of the Boston Normal School. Boston: Eastern Educational Bureau, 1888, pp. 165. Sent by mail for $1.00. This work seems admirably adapted for laying an excellent foundation in arithmetic. Any child that does the work indicated by this book will learn numbers first, and then figures as the signs of the numbers. The subject matter is broken up into easy stages; first, numbers from one to ten, then from one to twenty, one to one hundred, one to a thousand, and higher numbers. The explanations of the fudamental processes of arithmetic, notation, addition, subtraction, multiplication, and division are clear and complete. Every possible operation and combination of numbers from one to ten, ten to twenty, twenty to one hundred, are here given. The systematic development of numbers has not heretofore been fully given in English. This work covers that ground. Whoever takes a class over the line of instruction indicated in this book will give a thorough course in number work. The book is beautifully printed on fine paper and is tastefully bound.

BOOKS RECEIVED.

Allen & Greenough's Latin Grammar, revised and enlarged. Boston, Mass , and London: Ginn & Co., 1889.

Testa: A Book for Boys. Published by D. C. Heath & Co., Boston.

EXCHANGES.

The *Century* for January contains a very thoughtful and timely article in its Topics of the Times on "Annexation or Federation?" suggested by the article of Mr. Geo. R. Parkin in the December number. The *Century* begins the new year well, its illustrations being especially noteworthy.... *St. Nicholas* for January is a fine number and ranks wel with its many beautiful predecessors..... *The Scientific American*, referred to in another column, is the very best publication in this country for those interested in science, engineering, mechanics, inventions, etc... The *Popular Science Monthly* for January has, among other excellent articles, two timely ones on educational topics, "The Sacrifice of Education," and an editorial on the "Abuse of Examinations".... The readers of the *Illustrated London News* were delighted beyond measure by its elegantly finished Christmas number. ...The *SackvilleArgosy* and *Fordham Monthly* (N. Y.) published beautiful Christmas numbers... *Garden and Forest* (D. A. Munro, publisher, New York) began its second volume Jan. 2d. Some of the interesting and important features of this new volume will be a series of articles upon the elements of "Vegetable Physiology," by Dr. G. L. Goodale of Harvard; by Prof. Sargent, a series of articles on the "Native Trees of North America," with others of the greatest value to students of nature..... *Science* (M. D. C. Hodges, publisher, N. Y.) of Dec. 28th contained 20 pages, with map supplement. This excellent weekly, containing a review of science, art, education, may be had for $3.50 per annum....The New York *School Journal* contains in its last December issue a splendidly illustrated description of the great Pratt Institute, Brooklyn, New York, showing the main building, the free library, free reading room, the foundry, the trades room, the machine shop, the smith's shop, the school of art, dress-making, cooking, millinery, the museum, etc.... *Volapuk*, 150 Washington Street, Boston, Mass., is just the periodical required for the young student in Volapuk....The January number of *Wide Awake* is a second beautiful holiday number. The serial stories and other bright stories are all very charming....We have received the first number of *School Work and Play*, a semi-monthly Canadian children's paper, published by the *Grip* Publishing Company, Toronto. It is excellently printed and illustrated. Only 50 cents a year....The January *Bookmart* (Pittsburg, Pa.,) is a fine number of an excellent literary magazine.

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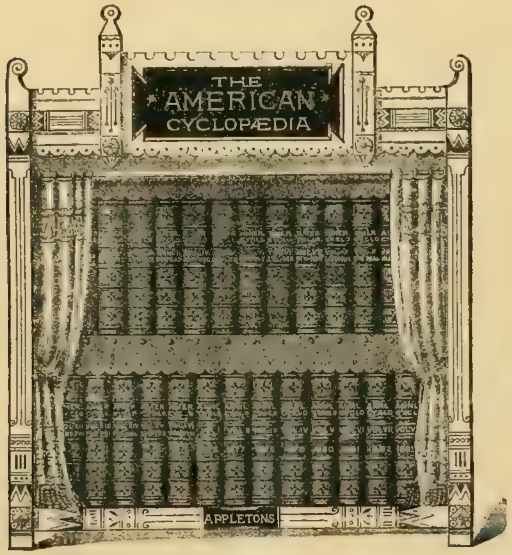
R. V. Jones, M. A., Ph. D, Professor of the Greek and Latin Languages.
Rev. E. M. Keirstead, M. A., Professor of English Literature, Logic and Psychology.
A. E. Coldwell, M. A., Professor of the Natural Sciences, and Curator of the Museum.
L. E. Wortman, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.



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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

IT IS the intention of "Ferndale School," to turn attention for a short time to our birds—by way of change.

THE meeting of the U. S. National Educational Association for 1889 will be held at Nashville, Tenn., July 16th-19th.

THE new text-book, Palmer's Temperance Teaching of Science, has just been published by Messrs. J. & A. McMillan, St. John. The volume is neat and cheap, and is a useful addition to the series of text-books for New Brunswick schools. The edition published by Messrs. McMillan has certain alterations from the American edition, which were deemed necessary by the N. B. Board of Education to adapt it for use in this province.

PROFESSOR GEORGE LAWSON, of Dalhousie College, ex-president of the Royal Society of Canada, as Secretary for Agriculture in Nova Scotia, sends a circular to secretaries of agricultural societies inviting the importation of "Sharpe's Imperial Chevalier Barley" for trial in the province. The variety is described as capable of growing on any ordinary description of land. It was obtained as the result of repeated growth and careful selection, gives an enormous yield, and is a grain of splendid quality.

THE FRUIT GROWER'S ASSOCIATION held a very interesting session at Wolfville last month. Professor Saunders, Director of the Dominion Experimental Agricultural Farm, took part in the proceedings. Professor Coldwell of Acadia, read a paper on the "Natural History of the Apple," Mr. S. F. Parkes, on "Apples and Oranges." The English sparrow was discussed and generally condemned. Dr. Henry Chipman, Grand Pre, was elected President, W. H. Blanchard of Windsor, Vice-president, C. R. H. Starr, of Wolfville, Secretary-Treasurer. Our schools should by occasional oral and object lessons advance the interests of all such industries. The REVIEW has faith in industrial education.

IN a recent article on the Greek language, Professor Blackie observes: "I undertake to prove that by learning Greek in the natural and true way as a living language, by a direct appeal to the ear and response by the tongue, thinking and speaking in Greek from the very first lesson, a greater familiarity with that noble language will be acquired in five months than is done now by the assiduous labor of as many years. Nature is always right; schoolmasters and scholars are sometimes wrong."

THE *Educational Times*, of London (Eng.), gives the following amusing and instructive extract from Inspector Oakley's notes on the lessons given before him by students:—"The faults which he condemns are: (1) The echo lesson, in which the pupils are expected to reproduce the information imparted to them in precisely the same form as that in which it was doled out; (2) the lecture lesson, which soon exhausts the children's power of attention, and not infrequently sends them to sleep; (3) the disproportionate introduction, either direct but too long, or indirect and too tedious; (4) the desultory lesson, in which the teacher is constantly passing from one topic to another having no connection with it; (5) the discursive lesson, in which the teacher is constantly going off at a tangent and forgetting to return; (6) the wrongly directed lesson, which is given to the inspector instead of to the pupils; (7) the disproportionate lesson, where a want of due relation magnifies the unimportant and glosses over the essential; (8) the unorganized lesson, which is given without due regard to the previous knowledge of the children; (9) the inelastic lesson, in which no answer is accepted that is not in exact verbal accord with the answer already in the teacher's head; (10) the mechanical lesson, in which the questions leave no room for the exercise of the intelligence; (11) the irrational lesson, in which attempts are made to 'elicit' from the children matters of fact of which they have never heard."

We cull a few notes here from the annual report of Miss Copeland, a graduate of the Pictou academy, now teacher of the Indian school, San Fernando, Trinidad.

"In June, of this year, there was a jubilee examination subject, 'Her Majesty's Colonies,' open to children of all the schools in Trinidad; a large number competed; ten were sent up from our school. Thirty-two prizes were awarded, two of which were taken by our pupils. It is suggested that these examinations should take place annually, on different subjects, to encourage the young to study.

* * * * * * * *

"As in former years our school has been visited by Canadian friends of the mission, also by His Honor, Justice Lumb, lately from England. He spent a morning with us and examined each scholar, showing such a kindly interest in them that all felt better for his visit, and encouraged to go 'forward.' In his address to the young men in the church in the evening, he made the proposal that a penny bank be started, which was carried into effect in September, in connection with the Sabbath-school. It is open every Wednesday evening at six o'clock, a half hour before prayer-meeting. I keep a little cash-box in the school, and as the children get a penny they bring it to me for safe keeping. Most of the children have taken a decided interest in it, and although some can afford and do deposit larger sums, we see many little ones walking up at the appointed hour with bank book and penny in hand. One afternoon Mr. Grant asked three little Indian boys, who were playing in the yard, to come and do a little work for him; when they had finished he gave each a penny to buy a piece of bread for themselves, but they came around to the other side of the house and asked for me, and gave me their pennies to keep until 'bank night.'"

The N. S. Normal School museum has recently been enriched by a number of very valuable contributions from its friends. Mr. George Stewart of Truro has given a fine specimen of very high grade silver ore from Mexico, and Mr. Watson Bishop, the Kentville ornithologist, the following: An alligator's egg, a logger-head turtle's egg, and a set of two eggs of the brown pelican, all from Florida, together with the following from Nova Scotia: A purple finch, stuffed; a nest of the chipping sparrow, with a set of four eggs; a set of three eggs of the spotted sandpiper, and a set of six eggs of the yellow-hammer, all from Kentville and vicinity; two eggs of the great black-backed gull, from Isle Haut, and a set of three eggs of the herring gull, from the same place. Friends of the institution may feel quite sure that such contributions are welcomed.

Let us get rid of the superstition that the process of analysis and parsing by themselves, can be made to do duty as the means of gaining a knowledge of the English language. Let us rather by patient study of an author gain an insight to the thought, and with the inspiration that comes from successful effort, endeavor to lead others by right methods and patient trial to see and appreciate what we ourselves have gained only by effort. This is the only way to gain what is excellent in thought, and the method may be summed up in a word or two; the ability to think and to do, and afterwards to get our pupils to think and to do. This is the gospel of the new education.

In this number of the Review we bring to an end the proceedings of the Interprovincial Convention of the teachers, held in St. John, in July last. No arrangements could be made at that time to publish the proceedings and principal papers in a volume. In the absence of such permanent form the Review has, with the assistance of the daily press of St. John, endeavored to supply the deficiency by publishing an outline of the proceedings together with some of the more important papers and addresses. The admirable review by Sir William Dawson of the work of the convention, and the possibilities of future education in the Atlantic provinces, which we publish in this issue, coupled with his notable retrospect at the opening of the convention, found in the August number of the Review, is a suitable ending to an introduction which struck the key-note of power and enthusiasm in that remarkable convention.

If our readers have preserved the copies of the Review and will bind them for this year, they will preserve in permanent shape a record that will as years elapse grow more and more valuable.

IN OUR next number, to be issued March 10th, we shall begin a series of lessons on elementary botany.

VICK'S FLORAL GUIDE for 1889 has come to hand, and is more than ever "a thing of beauty." Its elegant illustrations of hundreds of different plants and fruits, with its instructions for sowing and transplanting, descriptions of plants of all kinds for garden and conservatory, make it a Guide which no one should be without.

STICK TO THE TEXT-BOOK.

Are there teachers who make use of "ready-made" lessons cut from some educational journal, and who rely upon these in the school room? If so, we would say, Stick to the Text-book.

There are many so-called educational journals that furnish little else than these ready-made lessons, which the lazy teacher, looking around for labor-saving devices, eagerly catches at and uses without regard to fitness or subject matter. To such we would say Stick to the Text-book.

But stick to the text-book does not imply, have it always before you during class hours, slavishly keeping line upon line in view as the scholar moves along, but to make a diligent use of it out of school, so that when the time for recitation arrives, you may discard it and go before the class with the knowledge of your subject fully arranged in your mind, together with the best methods of presenting it. Then you will be conscious of moving along on a higher plane than that of your class, but to which they will eagerly look and strive to reach if you set them the example.

Nor do we mean when we say, "Stick to the Text-book," that the teacher is not to make use of all the appliances within his power to supplement his text-book. Methods and information from books and from educational and other journals, may be studied to advantage, and if found suitable, incorporated with the matter in the text-book.

But let all "methods" and "school-room aids" be carefully scanned before they are used. The teacher who will diligently and conscientiously sit down, study the district and its wants, the school and each scholar within its walls, will, if he has but a moderate amount of the material to make a successful teacher, reach methods infinitely superior to those cut out for him by one who may have little experience in teaching.

Stick to the text-books, study them, draw from competent instructors living knowledge, and study more carefully still the minds and dispositions of your scholars. Strive, in the short time you may be with them, to lay the foundation of an excellent and useful life.

MR. PARKIN'S RETIREMENT.

The retirement of Mr. Geo. R. Parkin from the principalship of the Collegiate school, Fredericton, is a loss to the teaching profession in New Brunswick. Mr. Parkin ever commanded the respect and esteem of his pupils, by whom he was regarded as a true friend and counsellor. Taking as his model such teachers as Matthew Arnold and Thring, he drew an inspiration from their lives and work that made his school at Fredericton the nearest approach to Rugby or Uppingham on this side of the Atlantic. Himself, full of energy, life and hope, he entered with ardor into the work of training his pupils for the active duties of life. How successful he has been, let the boys themselves tell:

Dear Mr. Parkin: The pupils of the Collegiate school, over which you have been head master now for so many years, come to bid you good-bye, and to wish you prosperity in that great work you are undertaking.

We are sure that you cannot leave the school without some regret, for you have served it with constant unselfish care, not for the sake of gain, and your labor here has always seemed to be for love rather than hire. You have given your heart to the school through many changes, and have brought to manhood and womanhood many boys and girls whom we do not know even by name, until now, we who have been here so short a time can give you nothing but our poor thanks in return for all you have done.

This, however, is not the only return you have; for we know that if all your old scholars could come together there would be hundreds to stand up and say that they owed you more than it was in their power—more than it was in anyone's power to repay. But now they are away in all parts of the earth; some have not been known since they left these rooms; and some whose future the school looked upon with great hope were not permitted to pass the beginning of life. And still we know that you, who trained them, have not forgotten them. Every one, we know, is treasured in your memory, and none comes to good or evil in the world that you are not made glad or sorry by it.

To-morrow you begin a new and great enterprise with a new year of your life. Those who are here wish you farewell. We wish you an increase of true success and lasting happiness with each return of your birthday. We ask you to accept this field-glass from us and to use it on your travels. Those who are old scholars cannot be present to take leave of you, but we feel that they will join in our good wishes when they hear of your departure.

We will look out and forward at your widening career; and we think that before long Canada and far off Australia shall learn to say what this school knows so well:

Languor is not in your heart,
Weakness is not in your word,
Weariness not on your brow.
You alight in our van! at your voice,
Panic, despair, flee away.
You move through the ranks, recall
The stragglers, refresh the outworn,
Praise, re-inspire the brave,
Order, courage return:
Eyes rekindling, and prayers
Follow your steps as you go.

Collegiate School, Fredericton.

CURIOUS PICTURES ON ROCKS.

Mr. George Creed, of South Rawdon, N. S., recently read a paper before the Nova Scotia historical society on some "pictographs" investigated by him last summer on the Fairy Rocks, between Annapolis and Queens County. Certain curious etchings on these rocks had puzzled antiquarians for some time. During the past summer Mr. Creed in company with several assistants made copies of the curious pictures, chiselled on the rocks and covering some 8,000 superficial feet. The rocks are of slate formation, covered for a great part of the year with water; and even when not covered the pictures are visible only after the strictest examination. They represent figures of all kinds of ships and canoes, quadrupeds, birds, snakes, human hands, feet, faces, Roman crosses, with many other designs,—the work being in some cases rough, in others wonderfully skilful and artistic. One picture represents a ship belonging to a period from one hundred and fifty to three hundred years ago. This was cut over another ship of the period of A. D. 1000, and appeared to be such as used by the Norsemen. Mr. Creed has advanced the theory that the Indians saw these ships pass the shores of Nova Scotia, and then drew them on the rocks. Several other representations of vessels of a more recent date are to be seen.

If these are, as Mr. Creed supposes, the graphic legends passed down from generation to generation by Indian tribes, their importance to the archæologist is very great. They have already received the attention of several scientific gentlemen in Great Britain and the United States.

CANADIAN STUDENTS AT HARVARD.

A correspondent sends us the following list, which includes all Canadians at present resident at Harvard University. The Atlantic Province men are indicated by an asterisk.

TEACHERS.

[The dates are those of taking A. B.]

* S. M. MacVane, A. B., *Acadia College*, 1865. Professor of History.

F. C. Sumichrast, (Lately of Halifax). Instructor in French.

* F. W. Nicholson, A. M., *Mount Allison*, 1883. Instructor in Sanskrit.

* W. F. Ganong, A. M., *Univ. of New Brunswick*, 1884. Assistant in Botany.

* B. Rand, Ph. D., *Acadia College*, 1875. Private Assistant in Philosophy.

GRADUATE DEPARTMENT.

C. W. Colby, A. B., *McGill Univ.*, 1887. Stanstead, P. Q. Morgan Fellow. History.

* A. J. Denton, A. B., *Acadia College*, 1879. Halifax. Chemistry and Botany.

* W. F. Ganong, A. B., *Univ. of N. B.*, 1884; A. M., *ibid.*, 1886; A. B., *Harv. Univ*, 1887. St Stephen. Biology.

J. G. Hume, A. B., *Univ. of Toronto*, 1887. Toronto. Philosophy.

* F. W. Nicholson, A. B, *Mount Allison*, 1883; A. B., *Harv. Univ.*, 1887; A. M, *ibid*, 1888. Springhill, N. S. Classical Philology.

HARVARD COLLEGE.

Junior Class.—* R. W. Ford, A. B., *Acadia College*, 1887. Milton, N. S.

* L. H. Jewett, St. John.

Sophomore Class.—* T. H. Currie, A. B., *Univ. of N. B.*, 1885. Fredericton. (With privilege of omitting junior year).

THE DIVINITY SCHOOL.

Junior Year.—* W. A. Taylor, A. B., *Mount Allison*, 1885. St. John.

THE LAW SCHOOL.

Third Year.—* G. G. Ruel, St. John.

Second Year.—* J. W. Bailey, A. B., *Univ. of N. B*, 1884. Fredericton.

* H. G. Fenety, A. B, *Univ. of N. B.*, 1885. Fredericton.

THE MEDICAL SCHOOL.

Third Year.—* H. H. Banks, Barrington, N. S.

* C. A Foster, Bridgetown, N. S.

First Year.—* J. A. McIntyre, A. B, *Univ. of N. B.*, 1880. St. John.

* W. H. Macdonald, A. B., *St. Francis Xavier's College*, 1887. Antigonish, N. S.

DENTAL SCHOOL

Third Year.—* P. W. Moriarty. St. John.

F. A. Stevenson, D. M. D., *Harv. Univ*, 1888. Montreal.

First Year.—G. M. Noble. Coaticook, Canada.

* J. T. Paul. St. John.

Mr. A. E. McCordic, third year, Law School, and Mr. W. F. Harris, Freshman, are Canadians by birth, but now reside in the United States.

It will be noticed that all the Canadians on Harvard's teaching staff are Atlantic Province men; of these, Acadia College has graduated two, Mount Allison one, and the University of New Brunswick one.

It is interesting and suggestive, also, to note that of the twenty students from all Canada, in attendance at this, the first American University, sixteen are from the Atlantic Provinces. Of this number, ten are College graduates, representing the following institutions: The University of New Brunswick, five; Acadia College, two; Mount Allison, two; St. Francis Xavier's, one.

Conclusions must, for obvious reasons, be drawn with extreme caution from such a list as this, but one or two lessons for our colleges are taught by it. For instance, *all* of the Canadian under-graduates in the arts department of Harvard are from the Atlantic Provinces. Why do not some of the other Provinces send from their much greater population a single student to the Harvard under-graduate course? The answer would seem to be, that the other Provinces provide in their own universities, an under-graduate course which is ample for all under-graduate needs. This is borne out, also, by other facts, not shown in the list, and it means that our colleges should direct their energies towards building up their arts departments, and not waste their force in attempts to build up special technical schools. The day for these will come when our colleges graduate men fitted to rank at academic institutions with the graduates of the best Canadian universities.

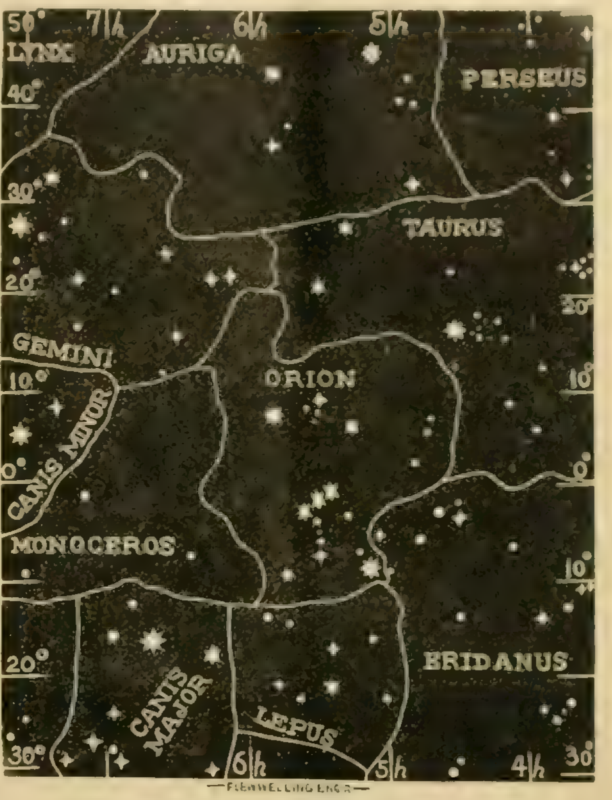
Again, as the list indicates, but as all college men know well, graduates of the different Atlantic Province colleges are not admitted to Harvard upon an equality. This points to the desirability of some uniform standard of graduation, and, consequently, of matriculation and under-graduate curriculum; in other words to an academic, though not necessarily actual union of all of the Atlantic Province colleges. This need not interfere with the individuality or peculiar field of usefulness of each.

Post-graduate students from the Ontario and Quebec colleges go for the most part to Johns Hopkins University, while their medical students, like our own, go chiefly to Montreal, Edinburgh, New York or Philadelphia. As for the other special schools, Law, Divinity and Dental, the other Provinces have their own, while those of Harvard are the nearest good ones to these Provinces, and the various educational advantages of Boston are an added attraction. The majority of Canadians in these departments would naturally, therefore, be Atlantic Province men.

We are very much pleased to learn from our exchanges that the teachers of Kings and Hants Counties, Nova Scotia, presented their Inspector, C. W. Roscoe, M. A., of Wolfville, with a complete suit of fur, as a new year's surprise gift. The address was read by George J. Miller of Hantsport High School and the presentation was made by Principal J. L. Bishop of Wolfville. Inspector Roscoe's abilities are well known outside of his inspectorate we may add. His highly successful devotion to the modern education was recognized by his election last summer to the vice-presidency of the Nova Scotia Summer School of Science.

AMONG THE CONSTELLATIONS.

No. X.—Our Star Map.



—Flewwelling Engr.—

With the above we commence a new series of star maps, to be prepared from time to time specially for the Educational Review. We trust they will be found to be more accurate and more systematic than those generally found in cheap, popular star atlases. In connection with this map our readers may peruse the articles in this series for January, February, March and April, of last year. We shall here simply explain its principal points.

To see the constellations, as figured here, take this map, face the southern point of the sky exactly, say, at half past seven in the evening, when this paper comes to hand (about the middle of February). The lower margin of the map will then nearly represent the southern horizon, and the top margin will represent what is overhead in the zenith.

Every star of the first, second, third and fourth magnitudes is represented here. If any of our readers will find one omitted, call us to task for it. Occasionally, stars of the fifth or sixth magnitude, the smallest visible to the ordinary vision, are indicated; but, as they are so numerous, they will only be indicated when in an especially interesting position.

To enable the reader to know the magnitudes of the stars from the chart, we propose to follow strictly the following usage: Eight-rayed stars will indicate first magnitudes; six-rayed stars, second magnitudes; four-rayed stars, third magnitudes; ordinary round dots, fourth magnitudes; minute round dots, fifth magnitudes or sixth magnitudes.

We shall not burden the map with the Greek letters; first, because they mask the configurations of the stars; second, because many of our readers will probably lack the nerve to master the simple Greek alphabet, and might be alarmed at the apparition of

> Grecian ghosts that in battle were slain,
> And unburied remain
> Inglorious on the plain!

We may change our mind, however, at any time on this point.

Again, to foster an accurate and mathematical knowledge of the face of the sky, and the position of heavenly bodies, we indicate the *right ascension* on the horizontal margins, and *declination* on the vertical margins. Thus, Orion is between five and six hours R. A. Right ascension in the sky corresponds to longitude on the earth. Declination corresponds to terrestrial latitude. The north and south poles in the sky are the north and south poles of the earth produced. And as the equator is midway between the terrestrial poles, so is the equinoctial line midway between the celestial poles. Produce the plane of the equator of the earth into the sky and it will mark out the equinoctial.

In our star map the equinoctial line is marked 0°, and it passes right over the three stars in the centre of Orion. The line 10° below, is 10° south declination. The line 10° above, is 10° north declination. Our map ranges from a little more than 30° south declination to 50° north declination—a little north of the zenith, in the Atlantic provinces.

Right ascension lines are drawn like lines of longitude on the earth, from the north pole to the south pole, cutting the equinoctial at right angles. We draw every 15th degree line in our map, because the sky appears to revolve 15° in one hour. In twenty-four hours it will revolve 360°. Instead of measuring in degrees, however, as longitude on the earth, we measure in hours and minutes. It is so convenient. Stars in six hours R. A., will be on the meridian exactly *one* hour after those on the five hour R. A. line. Remember the sky rotates to our senses as if the axis of the earth produced to the north and south pole stars were its axis.

Right ascension is measured eastwards, from the point in the equinoctial where the sun crosses it to the north, on the 22nd of March—that is, from the first point of Aries. The line passing through this point to the north and south pole stars, is to the sky what the meridian of Greenwich is to the earth. But on the sky R. A. is always measured easterly until it becomes 24h; which is always equal to 0h.

But we may be asked the question, Why are your lines of R. A. not drawn converging on each side of the equinoctial? Simply for convenience of drawing. The position of the stars between 30° and 50°. N. D., for instance, will be slightly distorted. Their east and west distances will be a little too great for absolutely correct configurations. But the map will, on the other hand, enable the R. A. and Dec. to be read off more easily, and the amount of distortion will not, in the slightest, affect the ease with which the stars can be recognized. For north polar stars beyond 40° and 50° N. D., a conical projection will give good results. South polar stars are invisible, and we shall, therefore, have nothing to do with them.

At the end of February Orion will be exactly south at about 6.30 P. M., local time. About the middle of March, at 5.30. In a word, every star souths about a half an hour earlier every week, or two hours earlier every month.

Astronomical Notes.

Venus is brilliant in the western sky, in the constellation *Pisces.*

Mars is nearer the horizon, in the constellation *Aquarius,* in the neighborhood of Mercury nearing the sun.

Mercury was clearly visible to star-gazers on the evening of the 30th ult., and for several evenings following, and was in line with Venus and Mars. The new moon on the evening of the 2nd inst., and these three planets, made the western heavens unusually bright and conspicuous. It is a planet of a pinkish color, shining with a twinkling light, and from its nearness to the sun may have been mistaken for a fixed star.

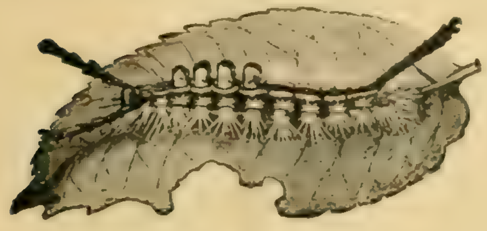
Saturn is in *Leo* not far from the first magnitude star *Regulus.*

Jupiter is conspicuous as a morning star in the constellation *Sagittarius.* Early risers may get a view of him from three hours before until nearly sunrise.

The Halifax *Chronicle* recently devoted a leading article to amateur astronomy, with a plea for more attention in academies and high schools to this important subject. It recommends that each academy in Nova Scotia be provided with a small telescope. Such an instrument would be a boon, not only to the school, but to the whole neighborhood. It is surprising how few people of intelligence know the courses of the planets, or even have an approximate idea of the structure of the heavens.

FERNDALE SCHOOL.

No. XIX.—The Tussock Caterpillar.



Orgia Leucostigma (Sm. & Abb.)

Cold news for me;
Thus are my blossoms blasted in the bud,
And caterpillars eat my leaves away.
—*Henry VI., Pt. II., Act III., Sc. I.*

T. How many have seen the caterpillar sketched here?

(A number of scholars raise hands.)

T. Where?

S. On the leaves of the apple trees.

Another S. And on plum and pear trees.

T. I suppose you have. They have sometimes been too numerous in parts of our province and have been especially injurious to the apple trees. Compare the drawing with these specimens preserved in the small vials which you will please pass along the class. How long is the caterpillar?

S. About an inch.

T. Describe its tussocks or tufts of hair.

S. Two long black tufts stand out slanting like straight horns from near its head, and a single one from the other end. Four yellowish white brush-like tufts stand up vertically on its back; and there are long, fine, yellowish hairs in clustered loose groups all along each side.

T. Very good. Describe the color of its skin.

S. Yellow, with the head and two tubercles on the hind part of the back, red. There is a narrow blackish stripe along the back; and a broader but fainter one along each side.

T. Correct enough. They were hatched from eggs about the end of May, and the young ones immediately commenced to eat the opening leaves.

S. Yes, and if you shook the leaves they would fall off and hang to them by a fine thread of silk like a spider's web.

T. Correct. About the middle of July they are full grown, and proceed to spin their cocoon inside of a leaf or in the crevices of the bark of trees. By the first of August they are hatched. The female is simply a huge ugly body with feet but no wings. It gets out of its cocoon and remains upon it until it deposits its eggs, from 300 to 500, in a frothy mass like spittle. This frothy substance very rapidly becomes hard and firm, and the insect dies.

S. If it has no wings it cannot fly?

T. True. The female cannot fly. But the male is a gaily winged moth. Here we have him pinned in our collection.

The Male Moth.

A second brood is soon hatched; they complete their growth about the end of August. The moths from the second brood deposit in autumn the egg masses which are hatched next May.

S. Will the frost freeze the eggs and kill them?

T. Not "kill them" under ordinary circumstances, as the frothy parchment by which the eggs are covered up is a good protection from sudden changes of temperature and wet. How would you fight them?

S. I would search for the empty cocoons with the egg masses upon them during the winter when the twigs of the tree are bare and destroy them.

T. Very good. But don't on any account destroy the cocoons of *this* moth which may have no egg mass upon them. Can you guess why?

S. Perhaps the moth has left it for good and all.

T. Not exactly. The female chrysalis is likely to be yet within the cocoon in such cases.

S. Then they should be killed before they come out.

T. No. Any female chrysalis which does not come out and deposit its eggs before winter must be dead already, and therefore need not be killed again.

S. But why should we be so careful about not destroying what is destroyed already?

T. Because the chrysalis was probably destroyed by small parasitic flies which laid their eggs in or on the body of the caterpillar. When those minute eggs were hatched the small larvæ fed on the substance of the body of the chrysalis of the caterpillar and probably ate it all up. The parasitic larvæ then went themselves into the pupa state, thus leaving a number of minute cocoons within the larger one, all ready to burst out as flies next May to hunt for more Tussock Caterpillars to deposit their eggs upon.

S. Then the cocoons found in winter *without* egg masses, are either empty male cocoons, or destroyed female cocoons filled with the pupa of next summer's enemies of the caterpillar.

T. Correct. Our great Canadian entomologist, William Saunders, says there are no less than *nine* different species of four-winged and two-winged flies parasitic on our Tussock Caterpillar.

HINTS FOR THE SCHOOL ROOM.

I. Physiology—Digestion.

INTRODUCTORY.

T. If we took no food for a number of days, what would be the result?

S. We would waste away and at last die of starvation.

T. How could it be shown that we would waste away?

S. Why, everyone could see it; and if we weighed ourselves from day to day, the scales would show that we would be growing lighter. There would be a loss of several pounds each day, very likely.

T. You are correct; and that fact illustrates the important truth that we are constantly wearing away, and that food is necessary to supply the constant waste. Now let us try to see how food becomes a part of our bodies. If you were to cut your hand very deeply would you find in it any potatoes, or bread, or beef, or fish?

S. No; it would be all flesh and blood and bone, and——

T. Then all the food we take must change into something else different from what it may be when we eat it. What would you call that change?

S. It must be dissolved, when taken into the substance of the body and changed to blood and flesh.

T. Yes, the dissolving we may call *digestion*, and the change *assimilation*. But why should digestion be necessary ?

S. Because potatoes, or beef, or fish, or bread could not go into the currents of blood which are rushing all the time through every part of the body building up anew every little particle which is wasting away.

T. Very good; I am glad you did not forget our lesson on the circulation. All the food which is taken into the substance of our bodies must first be dissolved and changed into some liquid form. And the region of the body in which these changes are accomplished is called the *alimentary* canal. What is the meaning of *aliment ?*

S. Food.

T. Then the alimentary canal may be called——

S. The food canal.

T. When the food is in any portion of this canal is it in the substance of our bodies?

S. No. If a person has his mouth full of biscuit, the biscuit is in his mouth—not in the substance of his body, of course.

T. Then the alimentary canal, that is the cavity of the mouth of the stomach and of the intestines are all outside of the substance of the body?

S. It looks like it.

T. You are right. The alimentary canal is really a tube of varying size and character, and its cavity is really as much outside of the body as is the surface of our skin.

S. And is it covered with skin like the outside of the body?

T. It is. But there are a few important differences in the nature of this skin. Instead of skin, it is called the *mucus membrane.* Its outer or scarf skin is so thin that the blood filling the millions of minute capillaries are quite visible through it. Proof: open your mouth and note its color.

S. Red.

T. The outer skin of the body has a great number of sweat glands in it. The skin of the inside of the alimentary canal, that is the mucus membrane, has a still greater number of minute glands in it; but instead of secreting and pouring out perspiration, a great many of these pour out mucus which is a clear slimy fluid and forms a portion of the spittle in the mouth. It serves to keep the mucus membrane moist.

S. It is because the skin of the alimentary canal is filled with so many glands pouring out mucus that it is called the mucus membrane, is it?

T. You are quite right; it is just so. But in different parts of the canal there are other glands which pour other liquids of great importance in dissolving our food. We shall consider these in our next lesson.

II. Ptyalin.

T. We come to the conclusion already, that the food all through the alimentary canal is really as much outside of the substance of our body as if it were applied like a plaster to the outside of our body. but the mucus membrane is a kind of skin which pours out from itself substances which help in liquifying the food; and the thinness of its scarf skin permits of the absorption of this liquefied food into the substance of the body very easily.

S. Is not the food digested in the stomach?

T. It is digested in every part of the alimentary canal.

S. Is it very long?

T. About twenty-eight feet in a full grown man.

S. Why! that would reach from one side of our school house to the other.

T. Yes, and all the food we take will pass through that twenty-eight foot tube unless it is dissolved and absorbed through the mucus membrane. Some food dissolves in the mouth, more in the stomach, and some more still in the intestines. How shall we study it?

S. Begin with mouth.

T. Very well. The mouth, the pharynx of the back of the mouth, and the gullet make up the first *foot* of the twenty-eight. Now, what do you do with the food in your mouth?

S. We chew it up fine with our teeth, mix it with mucus to a paste, press it back to the pharynx in a little lump and then we can't help swallowing it at a gulp.

T. Whenever the bolus of food is pressed back to the base of the tongue against the pharynx, the muscles right above the bolus contract and press it down the gullet; and for nine or ten inches a wave of contraction follows after the bolus until it is pushed into the stomach.

S. Why do the muscles contract in that way?

T. Why do you wink when I pass my hand near your eye? Why do you cough if anything is in your throat which should not be there? Whenever any part of the body feels anything touching it, it commences to act in some way as if it possessed a kind of knowledge that it had a particular duty of its own to perform. Very often we find that the different parts of the body appear to know and to do their duty better than the man himself. You can understand a fuller explanation of these things when you are more advanced.

But there was a mistake in the description of mastication given me. The food is mixed with more than the *mucus* of the mouth. If you only think of it, you can now notice a flow of liquid in your mouth; this flow is increased in the process of mastication, and you know it is called——

S. Saliva.

T. Right below each ear and behind the jaw is a salivary gland—called the *parotid* gland. When you had the "mumps" you could feel this gland swollen up into a great painful lump. Well, this gland makes saliva from the blood and pours it out through a small tube right opposite the second upper back tooth on each side of the mouth. Underneath the corner of each jaw is another pair of salivary glands called the *submaxillary*, and under the tongue we have a third group—the *sublingual* salivary glands.

S. And does the saliva digest any food?

T. The saliva contains a substance called *ptyalin*, which rapidly changes starch, especially if cooked, to sugar—a kind of grape or fruit sugar or glucose.

S. Is this sugar different from what we sweeten our tea with?

T. It is slightly different. It is just the kind of sugar that can be absorbed by the mucus membrane easily. It does not taste so sweet. But cane sugar itself must be converted into a glucose sugar before it is a food, and the mucus secreted in the alimentary canal very rapidly and easily brings about this change.

S. The digestion in the mouth then, is the change of insoluble starch into soluble sugar.

T. Precisely. Prove it. Take a piece of biscuit or dry bread and chew it for a little time in your mouth. At first it is not sweet; gradually it becomes sweet. It that not so?

S. Yes, it gets quite sweet. There is starch in potatoes, and they get sweet also when you chew them.

T. You can try another experiment when you go home. Pour some boiling water on a little starch, and when the thick sticky jelly-like paste is cool enough, put a teaspoonful in your mouth. It will be tasteless at first; but by mixing it with the saliva it very rapidly becomes both sweet and liquid. Now, what lesson should we learn from this?

S. That we should chew very well all foods containing starch, such as potatoes, porridge, bread, rice, sago and the like, so as to mix saliva with every particle of the starch in them.

T. Should we "bolt" such food in a hurry?

S. No, we should keep them in the mouth until we produce and can enjoy their sweetness, and then swallow.

T. Can you "bolt" a cracker in a hurry?

S. You might choke, it is so dry, unless you took a sip of tea with it.

T. Which would be the better way to get the nourishment of the bread, to chew it until moistened with saliva or to moisten it with tea?

S. To moisten it with saliva. If you moistened it with a liquid to enable you to swallow, the starch would not be converted to the soluble sugar.

T. See who can make a good rule of diet to prevent this form of indigestion?

S. Eat breads, and all starch-bearing food without mixing with drinks. Take the drinks only after the bolus lubricated with saliva alone has been swallowed.

T. Very good, remember that and grow to be a strong and healthy man.

In our next lesson we shall note what kind of digestion is accomplished in the *second foot's* length of the alimentary canal, the stomach. I may mention however, that in the saliva of most animals there is no *ptyalin*. What do you think of that?

S. I suppose they don't need it——They don't eat biscuit——They may "bolt" their food as fast as they can and it would not make any difference. I suppose their food requires to be ground well for stomach digestion all the same.

What Can Be Omitted.

He who makes two blades of grass grow where one grew before, is a benefactor of his race. But the way to get room for the second blade is to pull up the weeds that take the place it ought to have. Mr. A. E. Frye has been pulling up a few geographical weeds of "comparatively worthless knowledge upon which fully three-fourths of the pupil's time is wasted." Notice "fully three-fourths"! That is a good deal of time to throw away "wasted;" isn't it too bad? Teachers are paid to do "wasted" work. "Time"! precious time! For what time is more precious than the few years of school life, between seven and twelve? We can better afford to waste time when we get old, but what punishment should boards receive who by legislative command require pupils and teachers to waste their time? But this is preaching enough for to-day. Here are the items:

1. Book definitions of natural forms of land and water.
2. Heights of mountain peaks and ranges; lengths of rivers; names of unimportant peaks, ranges, rivers, capes, peninsulas, etc.
3. Answers to the countless text and map questions which the teachers neither know nor care to know.
4. All details of relief that do not affect the general rainfall and drainage; and all details of coast lines which do not affect climate, or are of no commercial importance.
5. All systems of construction lines which are not discovered (by the pupils) in the general directions of coast lines, or in the trends of highlands.
6. Lists of products—export and import—except those of chief commercial value.
7. Names of the hundreds of towns and cities which are not of commercial, capital, or historical importance.
8. Area of countries, states, and groups of states together with exact political boundaries of the same.
9. Population of cities and countries, and statistics of races, governments, and religious denominations.
10. All knowledge that is poured in merely for examinations, and which the pupil is not expected to remember after he leaves school.

What have our readers to say concerning this? Our columns are open for replies.—*The School Journal.*

Singing in Public Schools.

The Wisconsin *Journal of Education* admits that in some respects the schools of the United States seem to be behind those of England. Special reference is made to vocal music, from which we quote: "Professor McAllister said his attention had been especially attracted to the singing in the Board Schools and to the excellence in scientific instruction. Instruction in the former is very thorough, the 'Tonic Sol Fa' system being universally used throughout England. So far as my observation went, the results are very striking. Universally the children sing well, and in the higher standards difficult part music was sung by the children at sight quite readily. The English people, I think, value this training quite highly. It is a feature of the schools which more than any other reaches the home, and is having a marked effect upon the general culture of the great mass of the people."

The Primary School-Room.

DRILL TO CONNECT LANGUAGE WITH IDEAS OF POSITION AND PLACE, AND TO DEVELOP ATTENTION OR SPONTANEITY OF OBEDIENCE TO THE TEACHER'S COMMANDS.

The class is brought to the position of "attention." The teacher then gives the following orders, which are repeated until they are uniformly and simultaneously performed. Whenever some of the pupils appear to be getting fatigued the exercise should be suddenly changed, and nothing comes in better than a "physical exercise song" or a "motion song." They can hardly be too many or too varied in any primary department.

Exercise 1. Raise your right hand as high as the shoulder. Extend the forefinger. Let it point straight up—to the *zenith.* Let it point straight down—to the *nadir.* Let it point straight to the front—*level.* (Repeat with the left hand).

Exercise 2. Raise and extend the forefinger of your right hand. Place it on the middle of the palm of the left hand. On the top of the left thumb. On the fore finger. On the little finger. On the middle finger. On the middle of the back of the hand. On the nail of the thumb. On the middle joint of the middle finger. (Repeat right hand motions with the left).

Exercise 3. Raise your right hand. Raise your left hand. Put them on the desk, one touching the right side, the other the left side. Move the right hand from the right side to the left of your desk. Move them both to the middle. Move them to the front. Move the right hand from the middle to the right end. From the right to the middle. From the middle to the left. Move the left hand from the left to the right. (Repeat right hand motions with the left).

Exercise 4. Point your right hand towards the zenith. Make it *vertical.* Point it to the nadir. Make it *vertical.* Point it to the front. Make it *horizontal.* Point it to the right. Make it *horizon-*

tal. Point it to the front. Make it slant upwards half way between the *horizontal* and the *vertical.* Point it to the right. Make it slant downwards half way between the *horizontal* and *vertical.* (Repeat the motions with the left hand.)

Exercise 5. Let us look out on the great world. Has it a right side and a left side? Let us see. Look all around the sky where it seems to touch the trees, the hills or the sea. Which side shall we call its right hand? It must be the same for every place? Well now, is not that side the side where the sun rises? The side from which the light comes? How glad we ought to be to have the sun come every day after the darkness. Well, let us all turn ourselves so that our right hand will be on the side where the sun rises. Where will our left hand be pointing? "Where the sun goes down." Now stretch our hands out horizontally—the right to the side where the sun rises; the left to where it goes down. The right hand points to what we call the *east*—the right side of the world; the left hand points to the *west*—the left side of the world. Point the right hand east—west—east—west.——Point the left hand west—east—west—east.——Point both hands out to the front. That is called the *north.* Point them both back as far as you can—that is *south.* Without changing your position, stretch both hands as strongly as you can, to the north—south—north—south;—east—west—east—west;—north—south—east—west.——

THE INTERPROVINCIAL CONVENTION.

The closing sessions of the Interprovincial Convention in St. John were marked by papers and addresses of great interest to teachers. In the afternoon, Mrs. F. W. Parker, of the Cook County Normal School, Illinois, gave an address on the Delsartian School of Expression; Miss H. C. Magee, of the Wisconsin Normal School, read a paper on Art in Education; Monsieur Vitrain, of Philadelphia, delivered a short address on the methods of the Berlitz Schools of Languages.

His Honor, Lt.-Governor Tilley, presided at the public educational meeting in the evening. The large hall of the Mechanics' Institute was crowded to its utmost capacity. Addresses were delivered by the chairman, by Dr. J. G. Fitch, of London, Sir Wm. Dawson, Hon. G. E. Foster, Minister of Finance, Hon. Mr. Ferguson, Provincial Secretary of P. E. I., Dr. Allison, President of the Convention, and Col. Parker. The eminent and scholarly attainments of many of these speakers, the earnestness and good sense with which they dealt with the different phases of educational work will be long remembered by those who attended that memorable meeting. We can only find space at this late date for a full synopsis of Sir Wm. Dawson's admirable address which we commend to the careful attention of our readers:

SIR WM. DAWSON'S ADDRESS.

Sir William said that, without flattery, he doubted if he had ever attended such a remarkable meeting of teachers. He had before him remarkable specimens, speaking as a naturalist, of educational men and women. Since his address at a previous meeting on the History of Education in Nova Scotia, he had learned something about its progress in New Brunswick, which was equal to that in the sister province. In 1853, he visited New Brunswick as a member of a commission to revivify the provincial university, which was then in a moribund state. Among the commission's recommendations was the establishment of a school of engineering. Many of the recommendations of that commission had been carried out, and the university of New Brunswick was now in a satisfactory and progressive condition, while Mt. Allison had also made great progress. The schools of St. John were admirably organized, and the Girls' High School, of which he knew well both the principal and the work of the pupils, was the largest and probably the best organized in Canada. He had not referred in the previous address to college education. The more he thought over the title of the debate of last evening, "The Influence of the College on Industrial and Social Life," the more he saw in it. The industrial vitality of any people was always in proportion to the development of higher education, and the place which the people of any country could secure socially among the nations of the world was regulated by the same cause. You may search the world over and you will not find a country which has advanced to the height of prosperity and consideration among others that has not paid great attention to its colleges and universities. His own institution, McGill, had extended a helping hand to education for the ministry, the bar, and the practice of medicine, the teaching profession, etc. They had a school of civil engineering and mechanical engineering, and one of mining engineering, and another of practical chemistry. Was not McGill thus contributing to the industrial progress of the country? The wisdom of the public would be to give the smaller colleges also the means to do this. We were thus training our young men for the higher work, instead of having to import men from abroad. To do this well, a chain of connection was needed from the elementary schools up to the universities, and a reflex influence from the colleges on the schools. Sir William complimented Prof. Anderson on his bold defence of Scottish colleges on Wednesday night, and showed how well Scotland carried these connecting links all through her educational system. The schools lent students to the universities, the universities provided the teachers of the parish schools, the schools trained the men and women, and they made the character and influence of Scotland. The method of training by the teachers of the lower schools was dwelt on by the speaker. In the college these bonds of discipline had to be loosened and the pupil fitted to teach himself and others in the world. This could only be done by specialists incorporated in a college faculty. The college had to reach all a young man's faculties, to make him "all rounded." How best to do this is a matter of debate, but there was no necessity of pitting one college subject against another—classics against history, etc. We must have them all. (Applause). If we have not them all, there is where the defect comes in. All these must be judiciously administered to a student. The junior year's work is on general subjects, or those most useful, with sufficient variety to develop each student's special qualities. Thus only would they be qualified to choose for themselves what lines of study they would pursue. Young men only begin to know their special aptitudes some time after entering college. At the outset they have often false notions. Touching on Dr. Schurman's remarks the other morning, Sir William said he fully concurred in the absolute necessity of scientific training and depreciated exclusive devotion to classical subjects, and also the unscientific methods of instruction often employed. Still, these subjects were of great value, and especially Greek. Greek was not a dead language. It was used in the live business town of Athens. It was largely the commercial language of the eastern Mediterranean. It is the most perfect of the Aryan tongues, and the more we can enter into its spirit the more we can improve our own language. It was the language in which was not only a very noble literature, but it had been selected as the vehicle of the teaching of Christ and His apostles. It was thus the charter of the Gentile churches. Again, Greek is the source whence we get most of our scientific terms. Personally, he found in his teaching that the man who had no Greek was at a disadvantage compared with the student who had even but a little Greek. You cannot cut off Greek without damaging the teaching of our sciences.

Another point. Language is one thing, literature another. The teaching of language in an elementary way is easy, and adapted to the minds of children. On the other hand any language in its higher philosophy and philological relations presents problems of the most scientific and far-reaching character. So literature begins with mere nursery rhymes, and leads up to heights only to be reached by matured and cultivated minds. Nor can the literature of any people be separated from its history. They act and re-act on each other. These points must be considered if we desire to have correct views as to the teaching either of classical or modern languages, and this teaching should in all cases be itself natural and scientific.

The same principles apply to physical and natural science in schools, and in this connection Sir William complimented some of the teachers on the ideas expressed by them at one of the morning's sections. The schools in which there is a certain amount of practical science-teaching are those in which the best results are produced in all other branches. We need a variety of food. The science of cram was described to be the giving of food to a child for which it had no previous appetite and no subsequent digestion. Whatever you can get the child to assimilate mentally, in so far you have educated it. But impart that knowledge for which it has an appetite and digestion. Sir William closed his lengthy but admirable address by citing the advice Paul gave to Timothy, "Be gentle unto all men, apt to teach, patient; in meekness instructing those that oppose themselves." This embodied the whole moral influence of the teacher. Sir William took his seat amid loud applause.

For the REVIEW.]

A Plea For Music.

In arranging our public school systems it is too often considered, that when spelling, grammar, arithmetic and others are included, we have a course complete and useful, full enough to equip the student with sufficient material for his ordinary use in life. This is true in part, and I would not in the least undervalue these subjects, far other is my intent, but rather to make some suggestion, whereby the hours of study may be enlivened and brightened, with quite as successful results.

It is not natural for man to be satisfied with continual labor, with no recreation to lighten the turmoil of business hours. He goes to his work more contented and far happier after an evening of pleasure and enjoyment. And this is doubly true with children. Peep with me into the school-room, and look at the little upturned faces that greet every new comer. The thought instinctively rises,—"How fully they enjoy the sunshine of life." And while the usual routine of work has great benefits and pleasure for them, I believe we may truly call music the sunlight of the school-room. As gymnastics breaks the monotony of the school session, music comes to cheer and inspire.

It is in itself a wonderful art, powerful in effect, useful from an educational as well as pleasurable point of view, and mighty in its influence. I would therefore make an earnest plea for the instruction of music in our public schools, giving the reasons which have appealed so strongly to me as logical and clear, and worthy of attention.

First, consider the physical benefit. It is impossible to sing well without full, free respiration, and on this account, no exercise is more beneficial in strengthening the lungs. This means quickening of the circulation, purifying of the blood and nerves roused to activity.

As a mental discipline, quite a degree of energy is required in order to read a difficult piece of music at sight, and it has been said that mathematics can claim no superiority above the profound study of harmony.

No art so strongly stirs the emotions of child or man, as music. It appeals to the ethical side of his nature, and awakens a love for the beautiful, brightest and best. Mark the effect of a patriotic song; as the enthusiasm of the singer bursts forth, it rouses his audience to feelings of courage and loyalty, and inspires to noblest deeds of valor and patriotism. In our churches, music lends a charm to the service, filling one with a spirit of devotion and sanctity. As the soft breath of wind stirs to rapturous melody the silent lute, so music strikes the tenderest, deepest chords of the human heart, making them thrill with the purest, noblest emotions in nature. The influence of music in the home is so gentle and refining. What picture stays longer in memory's store-house, than the group around the home fireside, enjoying an hour in song. There, parents and children are knit, as it were, by a bond so united and sacred, that though time and distance may separate them, naught can efface the remembrance.

As a matter of discipline, music aids greatly in public schools; so much so that it has been said by prominent educators, one can easily tell by the deportment of the pupils, if it is not taught. Horace Mann used to say, "If your children are restless, do not scold them, but sing to them."

Still another feature supporting the advisability of school music, presents itself. It is an accomplishment to be able to sing at all; it is a great accomplishment for one to read music readily at sight, and sing with good expression; and this can be systematically taught and understood in school. In this way, many children, who could never have the benefits of private tuition, receive from a full course in the public schools, knowledge sufficient to enable them to start toward earning a livelihood by that means. In Boston and other large cities, many churches draw their choirs from the public schools; and from the same source the Handel and Hadyn Society, the Apollo and Boylston Clubs, and other private musical organizations, recruit their numbers.

Then let me say in closing this first paper, give the children the happiness, the inspiration, and the many other benefits to be derived from the study of music, and allow a subject which touches the general public on so many sides its well deserved place in the school curriculum.

In a subsequent article, I will give some thoughts as to the best methods of teaching music in school.

M. U. G.

Truro, N. S., Feb. 2nd, 1889.

For the Review.]

Madame Kraus-Boelte and Her Kindergarten in New York City.

This lady stands deservedly in the first rank of kindergartners, not only in America, but also in England as well as in Germany, her native land. The patrician character of her early surroundings register themselves in her cultured and high-bred manners which charm by their sweet simplicity. Her father was a lawyer, holding the position of judge or chief magistrate in Mecklenburg Schwerin, and later on in Hamburg, and her ancestors, on both sides, were distinguished for learning and ability. A large connexion made her home a literary and musical centre, fruitful in social cultivation. She was born in 1836, before the kindergarten was formulated, but its distinctive features, freedom, self-activity, æsthetic work and moral and religious culture were finely illustrated in this model household. When four years old, she began to learn reading, writing, dancing, sewing and knitting. The instruction which she received with her brothers and sisters, from accomplished and learned men was broad and thorough, and supplemented by daily excursions in which the children were systematically introduced to the wonders of nature, art, trades and manufactures. On returning home, they were encouraged to make experiments in reproducing what they had seen. She had a family of twenty-one dolls from two feet in length to one inch. The industrious, clever child made and took care of all their clothing, and in the apartments of her doll-house went through an elaborate form of housekeeping. At fifteen she was sent to spend a few months with one of the best families in Hamburg where the elegant surroundings were an education in themselves. On her return home, she devoted from 2 till 4 P. M., which she was free to use as she pleased, to the entertainment of a large flock of poor children in a meadow near the house, rewarding those who had kept clean hands and face through the week with a penny, in addition to other benefactions. When she was eighteen her father's sister, then on a visit, by her account of Frœbel's kindergarten, aroused Marie's enthusiasm, and with her parents' consent she went to Hamburg to study with his widow. Seeing no chance to reduce her ideas to practice at home she concluded to go to England, to assist Madame Rouge in introducing the kindergarten among the poor and neglected, giving her services freely. When Madame Rouge left for the continent, Marie would not return home, but accepted a situation to teach the family of Chief Justice Lord Denman all the branches of education—and kindergarten. The happy years passed, until the eldest daughter was married and the younger children were beyond kindergarten age. The family, who loved her and appreciated her ability, would fain have kept her, but her love of the kindergarten work had become second nature and she could not relinquish it. She took up old and new studies, among others, modelling, under Prof. Miller, of Kensington Art School. He and others begged her to become an artist, but she says, "My one object was to do the best work possible in the kindergarten, knowing how much mediocrity there was, seeing with dismay how little kindergarten education was understood. I saw a difficulty arising in not having true, thoroughly-educated and trained kindergartners who would be able to train and teach others." Her first kindergarten was started in Lubeck with seven children, amidst great opposition; a few months saw the number increased to fifty-five. She had four beautiful rooms and a garden with a tent, under which in summer they worked and played. The mothers visited the kindergarten daily, in turn. She also trained her young girls for the nursery. So fine was her work, that Madame Frœbel exclaimed with tears in her eyes, "Oh! that Frœbel had known you,—could have seen you work; you are, in truth, his spiritual daughter." Her father dying in 1871, Miss Boelte came to America where she married Prof. John Kraus whose exhaustive "History of the Use and Progress of the Kindergarten" is referred to in Gen. Eaton's report as United States Commissioner of education. The perusal of an article in a Berlin paper referring to Kraus' "History" led in 1870 to correspondence on a subject of common interests. They founded in 1873 their normal training kindergarten and its associated model classes in New York. The pair are in perfect accord. Wherein speaking of "The Kindergarten Guide" as Madame Kraus-Boelte's, she protested to the writer against being considered the sole author, saying, "It is as much Prof. Kraus' as mine; we work together." He is a learned man with progressive ideas and brimfull of enthusiasm. It is something to remember, the earnest gesticulation, the intense face and the grand sonorous bass voice, rolling out stern denunciation against all sham and show work in the kindergarten.

The whole institution is planned as a whole, to connect the kindergarten and the school.

Kindergarten,	III. Division,	children	3 to 4	years old
"	II.	" "	4 " 5	"
"	I.	" "	5 " 6	"
Intermediate class,	....	"	6 " 7	"
Advanced "	....	"	7 " 8	"
Elementary "	....	"	8 "10	"

Any under three years of course enter the third or lowest division. Unity of plan marks the education of the seven years passed in this institute.

The children have flowers and vegetables to grow in pots and boxes. In the cabinet are specimens of over eighty different woods and a great variety of natural objects. The development of shells gives the starting point for natural history. The earth from which the plant springs up is an object of interest and affords in its differences wide scope for observation and leads to many diverse fields of knowledge. The constant reproduction of ideas gained by the children in many different materials, as well as by drawing and modelling, and a certain order of classification, from the beginning of the simplest "gifts" and "occupations" is continued and extended logically. This kindergarten is indeed the connecting link between the home and the school, continuing the work of nurture and development while the actual inspection and perception of real objects is made the basis of instruction preparatory to the school. Providence has smiled, and she who began from benevolence, to kindergarten the poor, now has committed to her charge, with ample remuneration, the little ones of the best society in New York. More than three hundred ladies have graduated, and hold her diploma, which commands respect everywhere. The specimens of work on the walls prove by their exquisite neatness how well-earned is her reputation. Unfortunately some specimens bestowed upon us were lost in transit. They were marked by originality of design as well as beauty of execution. Many excellent "guides" have been prepared, but none, in our judgment, for the use of mothers and nurses equal to "The Kindergarten Guide," the joint production of this estimable couple, co-workers now for many years. The numbers of the second volume which is nearly, if not quite completed, fully sustain the reputation of the work as a whole. How delightful it would be to see mothers and women generally studying this "guide" to kindergarten practice, so clear and well arranged in combination with Frœbel's "Cossetting Songs" which breathe the very spirit of love and wisdom.

C.

Halifax, N. S.

MEMOIRS OF A BUTTERFLY.

"'Tis greatly wise to talk with our past hours."

The approach of autumn and the conviction that I shall not survive the first sharp frost, would fill me with dismay did I not belong to the educated class of butterflies. I can submit to the laws of nature and die; I cannot submit to die and leave no record of my existence. But I am not called to this trial; my friend, the gadfly, promises to take charge of these memoirs, and to trumpet their praises through the insect world.

Of my infancy I remember nothing, except indeed it was said "I was a remarkably fine caterpillar;" but my own recollections begin at the moment when I burst from my chrysalis and found myself a butterfly. I belong to that splendid tribe called the Atlanta, my wings being glossy black, edged with the richest carmine. How well do I remember the morning of my first flight! From being shut up in a dusky prison, I suddenly found myself fluttering among flowers that I continually mistook for brother butterflies, the glorious sun shining without a cloud, thousands of insects sporting in his golden beams. How many friendships did I form on that happy day! How sweet were my slumbers when at night I folded my wings in a rose!

I will not describe my way of life. In a few days my rose tree became the resort of a selection from the most approved species of butterfly. The swallow-tailed, the peacock, the buckthorn and the atlanta kind took the lead on account of the splendors of their attire; the inferior orders were only bowed to at a distance, and, of course, every insect that was not a butterfly was regarded with the utmost horror, except always the gadfly, the wasp and the bee. The first was necessary as a newsmonger, and as all three carried stings it was not safe to despise them. Every day the coterie on the rose tree formed a party of pleasure to visit a different spot in the garden. Sometimes we danced quadrilles in the air, sometimes we formed a party for conversation beneath a myrtle-tree; occasionally, for the sake of his honey, we invited an old bee to join our picnics, but so much did we fear he might presume upon the honor and join us when it might be unpleasant to recognize him, that we only invited him twice. This delightful life lasted for a month; towards the close of that time weariness stole over us. Pleasure was the sole object of our search, and having exhausted all we knew, the inquiry was, "What should be done next?" Labor was out of the question; our high birth and refined habits equally forbade it. We had, therefore, no resource but to quarrel among ourselves. Jealousies, rivalries and bickerings now disturbed the rose tree. For myself, I made satirical verses on all parties. I was so vexed at the disturbed state of our politics that I contrived to make myself the head of a party, whom I drew off and established in a myrtle tree. Soon after two of the party met with an untimely death; one was crushed by a little ruffian of a school-boy, and the other took cold by venturing into a damp lily.

For the past fortnight my troubles have been of a personal nature. I feel the approaches of old age, grave thoughts will obtrude upon my mind, and on reviewing my past life I almost suspect that the despised ant and bee have been more honorable insects than myself, because more useful. I have enjoyed much pleasure, but then it is over, and the recollection is but cold comfort. I have been greatly admired; I am not sure that I was ever loved. I cannot help wishing I had a few kind actions to remember, but I cannot call any to mind. I certainly once felt ashamed of my party for scoffing at a poor black beetle (it could not help its ugliness), but then I did not use my influence to protect it. I did certainly once wish to relieve the anguish of a dying moth, by lifting it from the gravel-walk to a rose-leaf, but then I abstained for fear of soiling my wings. Well, if I might again emerge from my chrysalis I would live a very different life, but as I can not I must hope that the posterity of butterflies, to whom I dedicate these memoirs, will profit by my experience and my regrets.—*Sarah Jewsbury.*

A Petrified Stump.

An item in last issue of *The Enterprise*, referring to the petrified stump lately excavated in Fraser's freestone quarry in this vicinity, (New Glasgow, N. S.,) induced the writer to visit the quarry in question a few days ago. The fossil stump was found resting upon the edge of an excavated ledge, forming, as it were, a shelf in the stratified rock of the quarry bank. Its position thus exposed to view several of its roots and rootlets, some of which were distinctly traceable more than twenty feet from the stump. The natural way in which these rock-embedded roots are disposed, show, beyond doubt, that they rest where they grew, and that the stump has not drifted to its present position. The stump itself is a stump literally, for, unfortunately for the curious geologist, it is truncated by a horizontal plane rather below where the roots begin to divide, the whole of the trunk above that plane being wanting. The truant trunk must have been one of unusual size, for the stump measures about three feet across the top, its great roots bearing witness to how firmly the ancient forest giant was anchored in the soil. What particular genus of giant it may have been seems pretty clearly indicated by the arrangement and appearance of its roots, for the stump sends off four enormous roots, each of which sub-divides into two small ones. This regular branching of the roots is characteristic of a remarkable tree of the carboniferous period, known as the *Sigillaria*, so-called on account of the peculiar seal-like marking of its back, from the Latin *sigillum*, a seal. That this is the true character of the missing tree is further shown by the spots or pit-marks on its roots—an appearance distinctive of the Stigmaria root—the fossil rootlets to which these marks are due being still in some places visible. In the sandstone, therefore, of which this fossil stump consists, we have probably preserved a cast, as it were, of the stump and roots of a gigantic *Sigillaria*. If this view be correct, then could we transport ourselves in imagination back to a period towards the close of the carboniferous era, our fossil stump would be seen under very different conditions. The rocky bed on which it now rests would then appear as a swampy flat, reeking under a tropical sun, and in place of the stump would rise a tall and graceful tree, strangely different from modern vegetation, with its trunk fluted like a corinthian column and covered with grassy leaves. But earthly beauty was transient even in those remote days, and the beautiful *sigillaria* perishes, for an inundation of sand to the depth of two feet or more has overspread the swampy flat, above the sand the tall trunk decays and finally snaps off, and to complete the desolation the hollow stump fills up with sediment. Then comes the last event in its rock-written history. For fresh inundations of sand crush it beneath their ponderous mass and shut it out for ever from the light of day, unless, perchance, disinterred in our own prosaic age by the pick-axe of the quarry man, it returns to tell the geologist the strange story of its burial.—*E. MacKay in the Enterprise.*

Teachers' Salaries.

A correspondent in the Toronto *Educationol Journal*, cites a case which may find many parallels in other parts of the Dominion, he says:

"Last year I engaged in a good country school at a salary of $350 per annum. The inspector used his influence, however, to break the engagement on the plea that so large a school needed an experienced teacher. I was offered another school shortly afterwards at a salary of $325, and I foolishly accepted for fear I should not get one, being led to do so also by the hope of an advancement next year. Now, although I gave good satisfaction to trustees and inspector, raised the standing of the school considerably, and won the confidence of both parents and children, I was refused an advance on the ground that 'we can get lots for a smaller salary.' I told them to advertise. They did so, and received about twenty applications. I heard them read; some of them were simply abominable. The trustees were all in favor of one young lady, but because another was willing to engage for $25 less, the latter received the appointment. She enters on the noble work of teaching for the paltry sum of $275 a year—far less than is given to any ordinary farm laborer. Who is responsible for this?

One of the trustees said to me afterwards: 'You teachers have yourselves to blame for the small salaries that are paid. You cannot blame us for getting a teacher as cheaply as possible. Now most of the applicants here were pupils of the Model school. Had they all agreed to apply for a certain sum, one of them would have got it anyway. All their testimonials were good. It was only the toss of a copper who would get it, and the one who did might as well have had a reasonable salary as not. I got applications naming a certain sum and cards in a few days afterwards, offering to take $25 or $50 less. Thus you cut one another's throats.'

I am out of a school because I refused to take less than my services were worth, and I would chop cordwood for a living all winter rather than resort to such tactics."

Daily Bread.

Excessive anxiety and gloomy anticipation are the bane of many lives. Troubles are brooded over that never come, or, if they come, are not half as bad as was imagined. Few are content to live day by day and hour by hour, taking things as they are sent. A different course, however, is foolish as well as wrong! "Daily bread" is what we need. Would we not count him a fool who would eat and drink for to-morrow? Who dresses for to-morrow? Is it not equally foolish to bear the trials of another day as well as those that belong to the period through which we are passing? "As thy day." God measures out a portion to each person, and gives it as he is able to receive it, and according to promise. "So shall thy strength be." It is grace according to need or supply, as God orders the condition—not as man makes it but as God appoints it. He who falls into line finds the back suited to the burden. He who violates the Divine arrangement suffers by increased worry and vexation and by being out of joint with the purpose and operation of the God of Providence and grace.

N. S. Summer School of Science.

The committee of the Summer School of Science, which met in Halifax recently, accepted the generous offers of the Parrsboro people and trustees, and definitely settled on that town as the next place of meeting. They could not meet in a place surrounded by greater natural advantages—the advantages that go to make their plan of teaching science successful. We trust that among the many excursions they plan, there will be one to Amherst. We have to show them, first of all, Amherst, then, our marshes, our old historic landmarks, forts Lawrence and Beausejour, a submerged forest, etc., and also our sympathy in their great aim—that of making themselves better teachers. We trust the Cumberland teachers will make every sacrifice to be present and thus show their appreciation of the honor done our county by the N. S. S. S. of Science. Can we not send 100 teachers from Inspectoral District No. 10?—*Amherst Gazette.*

AMONG THE ACADEMIES.

The students of the Halifax academy are going to raise funds for the purchase of a piano for use in the convocation hall. Pictou academy procured a piano for the same purpose two years ago, the funds being raised by concerts, etc., conducted principally by students. On Feb. 4th, the Pictou amateur dramatic club played *Esmeralda* to a splendid house in the convocation hall—the proceeds to go towards the mounting of the birds and mammals of the province for the academy natural history museum. On a previous occasion the *Merchant of Venice* was put upon the stage by the third year class who were studying the play according to the prescribed high school course. It was a great success from both the histrionic and financial points of view. It also stimulated greatly a thorough study of the play in class. The Digby academy has invoked the aid of the press to arouse public interest in its projected museum work. Colchester academy has already made a good beginning, and so has the New Glasgow high school. Notes of progress in these or any other lines will be greatly welcomed by the editors, who will have much pleasure in giving condensed summaries of them from time to time.

A FEW days ago, a circular from the I. C. R. authorities, informed conductors that all who did not learn to write grammatically and spell correctly would be reduced, and that all brakesmen who could not write grammatically and spell correctly would not be promoted.

PERSONAL NOTES.

William S. Calkin, B. A., 1887, of Dalhousie College, has been appointed assistant professor of Chemistry at Cornell University. Mr. Calkin is a son of Principal Calkin of the Nova Scotia normal school.

The prize for the best collection of home-made physical and chemical apparatus exhibited at the Nova Scotia Summer School of Science 1888, has been awarded to Mr. John H. McMillan of the Pictou academy.

Professor F. H. Eaton, M. A., of the Nova Scotia normal school, Truro, is president of the Summer Science School of 1889, which is to be held at Parrsboro. Professor J. B. Hall, Ph. D., of the same institution, is secretary. Intending students should communicate their intentions as early as possible. The programme of the school will be issued at an early date.

Mr. Burton Foster, second teacher in the Collegiate school, Fredericton, N. B., has been promoted to the Principalship of the school. Mr. James Palmer, of Chatham high school, has been made second teacher.

Professor Alexander of Dalhousie College, has been appointed to the professorship of English literature in Toronto University at $4,000 a year.

The death of Mr. John Raymond, late Principal of the Kings County, N. B., Grammar school occurred at Hampton recently. During his long service as a teacher he sent out a great many young men well equipped with educational advantages, who in the different provinces will hear of the death of their teacher with regret.

QUESTION DEPARTMENT.

Questions and Answers.

M. B. H., TRURO.—(1) Should a student of telegraphy rest the arm, at or near the elbow, while practising? (2) Which is the better for a young man to study, telegraphy, or stenography and typewriting? (3) Where may they be studied?

(1) Some operatives do not rest the arm at all; but the majority rest the muscular part of the fore-arm upon the table, allowing the wrist to be perfectly limber.

(2) Which of these will be best will depend upon the inclination and ability of the young man; some might succeed at one but not at the others. Shorthand (with type-writing) is the more remunerative, but requires greater ability and a longer preparation.

(3) A glance at our advertising columns will show where these arts may be studied with advantage.

A. K.—Is "Kocale" a misprint for *Kocab*, the Arabic name for *Beta Ursa Minoris*, in the January article "Among the Constellations?"

ANS.—It is; "b" was read "le."

E. J. L.—"Can you give a lesson on digestion for the school-room?"

ANS.—We give one.

LITERARY NOTES.

Dr. Honeyman, F. S. Sc. (Lond.), F. R. S. C., of the Provincial Museum, Halifax, has published notes of discoveries of Atlantic sponges in the *Presbyterian Witness*.

The Pictou *News* is publishing an anonymous serial—"The MacDonald Family," dealing with topics of to-day, which exhibits much literary power.

Bliss Carman is about to publish in Fredericton, N. B., a limited edition of an elegy by himself, on Matthew Arnold. It is to appear in the form of a trilogy, and to be printed on large vellum sheets.—*The Bookmart.*

Mme. Marwedel, the distinguished kindergartner, of Washington, D. C., and more recently of San Francisco, Cal., has prepared a series of games and charts for home and school use, based on the most approved principles of kindergarten training, and intended to connect manual training with the home and primary school. These games and charts are also arranged to teach form and color. D. C. Heath & Co., Boston, will publish the valuable aids at once.

Many educators, who would be glad to use science in the training of young pupils, if they knew just how to go about it, will be interested in the practical directions given in an article on "Natural Science in Elementary Schools," by J. M. Arms, to appear in the March *Popular Science Monthly.* Mr. Arms writes with a full appreciation of the true aims of science teaching, and from an experience of ten years in the work.

Sir Walter Scott's *Lay of the Last Minstrel*, an edition of which, edited and annotated by J. E. Witherell, is to be published by D. C. Heath & Co., Boston. It will be accompanied by a map, expressly prepared to illustrate the poem.

The Rev. Arthur C. Waghorne hopes to be able, next year, to treat of the berries and fruits of Newfoundland in a much larger work. He has also in preparation a complete list of the flora of Newfoundland and Labrador, as far as it is known. He hopes this may be published the coming summer. Hitherto, the most complete list has been that of Mr. Reck's, which only comprised 371 species besides varieties. Mr. Waghorne's contains 900 species of flowering plants, about 50 ferns and over 250 mosses and lichens. His list gives the common English, and as far as it is known, the common Newfoundland names; affords indication of color of flowers, time of flowering, and usual place of growth, and specifies those which are found on the Labrador coast, and there, as well as in Newfoundland, and notes which are found in Great Britain. It also includes the flora of St. Pierre and Miquelon.

BOOK REVIEWS.

A COURSE OF EASY ARITHMETICAL EXAMPLES for beginners. London: MacMillan & Co., and New York. This is a series of well arranged examples in the ordinary rules of arithmetic, which the teacher may use with advantage as an excellent supplement to the text-book.

CLASSICS FOR CHILDREN: TOM BROWN AT RUGBY. Ginn & Co., Boston, publishers. Few books have had a better influence in helping to form the character of boys than Tom Brown of Rugby. To introduce such a book in school with the excellent notes that this edition contains, is to cultivate in boys a taste for sound reading, to give a health and stimulus to school life, and to help to form character.

SCHOOL DEVICES, a book of Ways and Suggestions for Teachers, by Shaw and Donnell. New York: E L. Kellogg & Co., publishers. Every teacher who wishes to give life and freshness to school work, should secure this book. It has bright suggestions on topics for the school-room, which are the results of a long experience in teaching. Such a book, judiciously used, cannot fail to be of great assistance to a teacher.

AN INTRODUCTION TO THE HISTORY OF EDUCATIONAL THEORIES, by Oscar Browning, M. A. New York and Chicago; E L Kellogg & Co, publishers. A book like this, introducing the teacher to great minds that have worked in the same field, cannot but be a powerful stimlus to him in his work. No better ideals could be presented to him than such masters as Comenius, Pestalozzi, Frœbel and others.

TESTA; A BOOK FOR BOYS. Boston: D. C. Heath & Co. This book is a translation from the Italian, by the Italian class in Bangor, Me., under the supervision of Luigi D. Ventura, their instructor. It contains excellent reading, not only for boys, but their parents and teachers.

GILL'S SYSTEMS OF EDUCATION. D. C. Heath & Co., publishers, Boston, Mass. This is an excellent book for the teacher's library. It presents education as a science, which should be studied if success is to be achieved.

ALLEN AND GREENOUGH'S LATIN GRAMMAR; a new edition revised and enlarged. Boston: Ginn & Co., and London. Students of Latin will welcome this revised edition of an excellent grammar. Such additions and improvements have been made in the text as the advance of grammatical knowledge and the experience of the school-room have shown to be advisable. Statements of principles have been simplified without sacrificing scientific accuracy, while, for convenience of reference and general reference of text, it is a great improvement on previous editions.

PRIMARY WRITING, by Mara L. Pratt. Boston: Eastern Educational Bureau. Price fifteen cents.

This is an ingenious method of teaching the elements of penmanship to young children. The method is based upon a careful description of what is to be done, which is given in such a way as to create an interest—indeed, an enthusiasm on the part of the children in the work before them. Many primary teachers will find this little device extremely useful, saving them much time and trouble.

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A. E. Coldwell, M. A., Professor of the Natural Sciences, and Curator of the Museum.
L. E. Wortman, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.

Xenophon's Hellenica Books 1—4, by Irving J. Manatt, Chancellor of the University of Nebraska. Although we have only been able to subject this volume to a somewhat cursory examination we have seen enough to convince us that it is a work of great merit. The text is so beautifully printed that it is a positive pleasure to read it. And though, in general, we object to notes in editions of the classics for class use, we must confess that the comments contained in the one before us are excellent—learned, but not abtruse; full, but not tedious, and calculated to assist and stimulate the good student without saving trouble to the indolent. The relegation of the *critical notes* to the appendix is a very commendable arrangement, while the synopsis at the beginning of each chapter will be welcomed by the general student. The introduction is well written and gives a correct and interesting history of the struggle for supremacy between Athens and Sparta prior to the period which is embraced by the Hellenica. We can heartily recommend this edition of the Hellenica, not only to teachers, but also to private students, as an admirable edition of a history which supplies us with an invaluable picture of a most instructive period in the history of the Greek States. Published by D. C. Heath & Co., Boston.

A Latin Reader for the Lower Forms in Schools, by H. J. Hardy, M. A. Stories and Legends. A First Greek Reader: by F. H. Colson, M. A. MacMillan & Co., London and New York. Like all the class-books issued by this firm these two readers are neatly bound and well printed. The selection of stories in both is exceedingly good, and they form an interesting introduction to the study of the Latin and Greek languages for pupils who are not prepared to read an author continuously. Though we cannot commend the vocabulary appended to the Latin reader, from its want of quantity-markings and its extreme conciseness, we feel bound to say that the notes in the Greek Reader strike us as being scholarly and serviceable. We are certain, from long experience, that the assistance of good dictionaries, such as Smith's Smaller Latin, and Liddell and Scott's abridgment, in the preparation of lessons such as would be prescribed from these Readers, would be much more satisfactory to the pupil, in his endeavour to reach a good translation, than what would be rendered by even better vocabularies than those which are contained in the Readers before us.

BOOKS RECEIVED.

The New Biology, (published by H. H. Carter and Karrick, Boston). The Tree of Mythology, (publisher, C. W. Bardeen & Co., Syracuse, N. Y.,) and other books received will be noticed next month.

EXCHANGES.

The Planter's Monthly, Honolulu, Sandwich Islands, Vol. VII., No. II., Nov, 1888, contains a very interesting report from the committee of the Planter's Labor and Supply Company, on the manufacture of sugar.... *Science of Photography*, January, has a fine full-page frontispiece from a photograph of a moon-light scene.... *The Microscope*, January, is filled with a great variety of well indexed items. It contains a splendid portrait of Wm. Jerauld Lewis, president of the American Society of Microscopists, with a biographical sketch.... The *Guardian*, P. E. I., is coming to the front in giving good, popular, scientific editorials from time to time.... The *Dalhousie Gazette* issued a special number, in honor of George Munro, on the anniversary of his birthday. It contains a good portrait of this eminent patron of university education.... The Halifax *Morning Chronicle* has a fine all round editorial corps. Short, pithy editorials on current scientific and education questions are well interlarded with the usual polemical material of very varying quality. .... The *Century* for February and *St. Nicholas* (*Century* Co. N. Y.), are at hand. The articles in both these magazines are becoming more and more distinctively educational in character. "The White Pasha" (Henry M. Stanley) with portrait and map of Africa is exceedingly interesting reading..... "The Story of a School" in *Popular Science Monthly* for February, (D. Appleton & Co., N. Y.) strikes a blow at formalism.... *Treasure Trove*, for February, (E. L. Kellogg & Co. N. Y.) has an interesting and instructive table of contents.... *The Academe* a bi-monthly magazine by the Academe company, N. Y., and the *Academy* issued monthly by the associated academic principals of the state of New York are excellent journals, devoted to the higher education..... *Wide Awake*, for February, (D. Lothrop & Company, Boston) is full of interesting and instructive sketches ....Dr. G. L. Goodale, Harvard University is contributing an interesting series of articles on physiological botany to Garden and Forest, (D. A. Munro, publisher, N. Y.).

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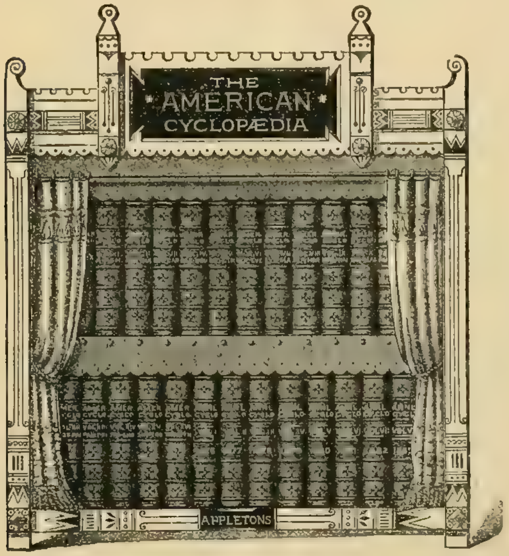

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The Educational Review.

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A. H. MacKAY, B. A., B. Sc., Editor for Nova Scotia.
ALEX. ANDERSON, LL.D., Editor for P. E. Island.
G. U. HAY, Ph. B., Editor for New Brunswick.

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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

SEE the advertisment of a teacher on page 199.

WE resume our course of plant lessons in this issue. In the April number will be found minuter details accompanied by drawings.

THE proposal to impose a postal tax on monthly publications in the Dominion of Canada would realize a revenue of perhaps $2,000 a year, and cripple a literature that needs fostering. *Cui bono?*

REV. DR. PATTERSON, of Pictou, N. S., has handed over to Dalhousie University his valuable collection of objects, illustrative of the stone age.

WE have received the report of the Halifax School for the Blind. Among the excellent features of this admirably conducted and useful institution which mark the year just closed, are the introduction of the kindergarten methods and the establishment of a technical department for the training of the boys.

THE cut of the Canadian Pine Grosbeak in this issue, as well as that of the American robin to appear in our next, was made from drawings by Mr. Harry Piers, a graduate of the Halifax County Academy, from specimens in the Down's collection of Nova Scotian birds belonging to the Provincial Museum, Halifax.

WE have made arrangements whereby we will receive new subscriptions to the *Forum* with a subscription to the REVIEW for $5.00. The price of the *Forum* alone is $5.00 a year. This is an exceptional opportunity for every reader of the REVIEW to secure the *Forum*.

A good library has been instituted in connection with the Upper Woodstock, N. B., schools. The teachers have been chiefly instrumental in making this desirable addition to the educational facilities of the schools, and their efforts in this line have met with a very generous response. Some 150 volumes of standard works are now in use, and it is expected that this number will receive additions from time to time from friends of the schools.—*Carleton Sentinel.*

We are pleased to notice this evidence of progress, and would like to chronicle the fact that every school in the Atlantic Provinces has a school library, in which, first of all, a good encyclopædia is a necessity; then books of history, travel, science, etc., should have a place.

READ the advertisement of the *Forum* in another column. Send $5.00 and receive that magazine and the REVIEW for one year. Address: "EDUCATIONAL REVIEW, St. John, N. B."

IN the March *Forum* is an article on "Canada and the United States," by Dr. J. G. Schurman, a native of Prince Edward Island, and now Professor of Philosophy in Cornell University. He is the latest contributor to the discussion in the *Forum* of the possible annexation of Canada to the United States. Prof. Schurman sees so great a career for Canada that he opposes annexation. He reviews the history of the provinces, describes their vast territory and resources, and concludes that in their development a rapidly increasing population will find labor and riches; and that the future holds too large a promise for Canadians to be willing to make such a breach of their traditions as to become a part of the United States. "Look at a map," he writes, "and you will see that within the latitude of Canada are included, in the Old World, Norway and Sweden, European and Asiatic Russia (excepting only the most southerly projection), Denmark, Prussia, Holland, Belgium, the northern section of France, and the whole of Great Britain and Ireland. From these countries came the races that succeeded Rome in bearing, as they still largely bear, the civilization of the world. And analogy suggests that under the bracing climate of Canada, in centuries yet to be, civilization may, in the New World, find its sturdiest supporters. The new provinces will, in a very few years, be the regal home of prosperous millions. Nature has said it."

The Educational Review for February has a heap more of good things for teachers. The editors are unremitting in their labors to make the Review something of practical worth to the teaching fraternity. They are succeeding well. Does every teacher in these provinces get the benefit of its pages monthly? —*Truro Sun.*

We are requested to ask N. B. teachers who are in want of schools to furnish the inspectors of their respective districts with their address.

A SUMMER SCHOOL OF LANGUAGES.

Various persons have been mooting the extension of "Summer School" work beyond the province of elementary science. We should be the last to encourage filling up of vacation with labor, unless there should be an urgent cause for it. Yet sometimes labor and recreation may be combined. Whether that can be done or not on the proposed lines must be answered by our readers; and, therefore, we bring to their notice a suggestion just made by an eminent Nova Scotian linguist who is teaching in one of the great American universities. He writes: "Would it be possible to have, either separate or in connection with it (the Summer School of Science), a 'Summer School of Languages?' We have several of these here and they have proved of great benefit to teachers, very many of whom attend them. The idea is simply an idea submitted to you, and has not assumed any definite shape in my mind. The outline of it would be something like this: Halifax, as a central and easily reached point for a location; Dalhousie, for lecture rooms. Three courses, English, French and German. Classes for beginners and for advanced students. I now speak more particularly of foreign languages—readings and translations of classical and modern works—outlines of literary history—comprehensive systems of study and explanation of main differences between English and foreign languages, chiefly difficulties of accidence and syntax elucidated by history of language. Weekly lectures in English on social and historical points illustrating and explaining literature. Course of, say, six weeks, from 1st July to middle of August. Attractions of Halifax as a summer resort would aid. There would, of course, be privileges of various kinds to students of the school."

THE FIRST STEP TAKEN.

The school commissioners of Dartmouth have voted $600 for a kindergarten in connection with the public schools. The town of Dartmouth, it appears, has taken the lead in the Atlantic Provinces in the introduction of the kindergarten into the public school system. This honor is quite in keeping with the progressive spirit of this town for a number of years past. It is very fitting, too, that Dartmouth should be the residence of the energetic and accomplished president of the Nova Scotia Frœbel Institute, who has done so much to arouse and hold attention to this important phase of education. It is now but a question of time—time to learn the advantages they have been missing, when the people of our cities and towns will arise and demand the kindergarten as the foundation of their free school system.

The open letter in another column, addressed to school boards by Mrs. Condon, the President of the Nova Scotia Frœbel Institute, contains a plea for the introduction of the kindergarten system which should receive the marked attention of those to whom is entrusted local educational development. The earnestness of the plea and the soundness of the arguments employed are creditable alike to the broad philanthrophy and self-sacrificing devotion of a lady who has given her mature years and a ripe judgment to solving the great problem of primary education.

McGILL UNIVERSITY.

We have received the annual report of McGill University, Montreal, which contains a number of interesting facts concerning the progress that is being made in this great educational institution. Of degrees in course 102 were given last year, raising the number of its professional graduates to 1440 and that of graduates in arts to 449. The whole university at present consists of McGill college with four faculties of law, medicine, arts and applied science, with about 50 professors and 650 students, Morrin college, Quebec and St. Francis college, Richmond, four theological colleges and the normal school which is practically a professional college for teachers.

The development of the faculty of arts in recent years has been very rapid, more especially in connection with the addition of the Donalda special course for women, which has attracted a large number of students. Independently of this, however, the number of male students has rapidly increased. This is shown in a novel manner by a diagram prepared by the Dean of the faculty and attached to the report.

The total number in the faculty has doubled in about five years, viz: 310 against 157 in 1884. The number of men has doubled in 14 years. The number in all the faculties has doubled in about 25 years, (576 in 1888, against 291 in 1863).

MANUAL TRAINING IN THE SCHOOLS.

A valued correspondent who has been studying educational problems in the United States, writes:

"I was delighted and amazed at the educational progress in the States; the manual training was wonderful; and what a blessing it is proving in the south, where it will be the redemption of the colored people! The testimony was unvarying on one point, that so far from its interfering with scholarship, those taking it did their other studies the better for it, and the younger boys did far better with tools than the older ones, and were more disposed to carefully follow the directions. It was pleasant to find that it was not treated as a mere 'bread and butter' study, but as a valuable means of intellectual development and highly conducive to morality."

Revised Course of Instruction for N. B. Schools.

We have received an advance copy of the Revised Course of Instruction for N. B. Schools. This, which has been under consideration for some time past, and has received the approval of the board of education, goes into effect on the first of July next.

We regret that the length of this revised course—together with the late hour at which it came to hand—prevents our publishing it in full. We can only refer in a general way to a few of the changes made.

The revision leaves untouched the principles and subjects which formed the groundwork of the original course. Greater prominence has been given to those subjects which may be regarded as more useful, while at the same time the intellectual portion of the course has apparently suffered no diminution, but has been made more practical in character.

The superintendent and his co-workers, who, aided by suggestions from the teachers of the province, have made this revision, have taken a progressive step in our educational history, which will commend itself to all progressive teachers.

The following outline of the more prominent features of the revised course are taken from the superintendent's forthcoming report:

The changes which have been made relate more particularly to the subjects of industrial drawing and those embraced under the head of Useful Knowledge. The study of industrial drawing has undoubtedly produced good results, though these fall short of what was expected when the subject was introduced. The course, for one thing, was too extensive, and few even in cities and towns have been able to complete it. It has also failed to call into exercise in any efficient degree the powers which it is the object of drawing to cultivate. It is believed that these defects are supplied in the amended course. The new drawing series—*Prang's Shorter Course in Form Study and Drawing*—comprises five books with an additional book in preparation dealing with geometrical drawing. This course is begun in Standard III and completed in Standard VIII. in graded schools—one book covering a year's work. In ungraded schools the subject is first taken up in Standard III. also, and the instruction for the first year is limited to the principles and exercises contained in the first book, but embraces two books during each of the next two years with simple geometrical exercises (taught orally) during the latter year. * * * * * The shorter course in Form Study and Drawing provides for the training of the hand as well as the eye. It provides for the examination of objects both by sight and touch, for making and modelling them before representing or drawing them. The practice of making the objects from paper, pasteboard, etc., by folding, clipping and cutting and of modelling them from clay introduces into schools, without disturbing their organic character or general aim, that kind of manual training which is daily becoming more and more important. The course also secures ability to make working drawings of objects and afterwards to make the object from the working drawings, to draw pictures from the actual object and to design and draw arrangements for decorations.

The requirements under the head of Useful Knowledge have, in most of the standards, been simplified and made more definite. The principles of classification have been deferred till the higher standards are reached, when the pupils from a wider acquaintance with facts, will be better prepared to deal with the subject. The use of Bailey's Natural History as a text-book is begun in Standard VI. of the graded course, and in Standard IV. in ungraded schools. The preliminary instruction on this subject is to be given *orally* in the underlying grades as indicated in the course. Lessons in natural history, whether given orally or prepared from the text-book, are of very little value, either as respects educative results or the acquisition of knowledge—hence the course enjoins the use of specimens. Lessons on the human system and how to take care of it are introduced from the outset and continued through the first six standards. These lessons will be found not only useful in themselves, but valuable as a means in leading the pupil up to an intelligent study of Palmer's Temperance Teachings of Science. The text is begun in Standard VI. *Oral* instruction on the effects of alcohol on the human system is begun in Standard IV., thus securing instruction on the harmful effects of intoxicating drinks for all pupils capable of receiving it. The course suggests that whenever it is practicable illustrative experiments be given on the lessons in the text-book. In ungraded schools formal lessons on the human system are not prescribed for pupils of the first three standards, but teachers are required to give the classes instruction on the conditions of health as specified in the note prefixed to the course. The text-book on Temperance Teachings is introduced in Standard IV., and explanatory lessons on the human system are to be given orally as aids to the intelligent study of it. The subject of physics is begun in Standard VI. and completed in Standard VIII. The teacher—not the pupil—is referred to Hotze's First Lessons in Physics as a guide to the instructions which are to be given *orally*.

A very few remarks on some of the other changes of the course must suffice. Standards III. and IV. of ungraded schools, which have heretofore embraced a period of one year and a half each, have been so modified as to form three standards, each covering a year. There are thus five standards in these schools instead of four as formerly. It is hoped that this provision will lead to a more exact classification than has yet obtained in these schools. It will be seen from the provision respecting the employment of a qualified assistant that the general interests of the school are guarded in the event of pupils taking the more advanced subjects after completing the prescribed course, and also that if the five standards are taught and the enrolled number of pupils fifty or upwards, the employment of a class-room assistant is *obligatory*.

Object lessons as a separate subject have been struck out of the graded course. They are amply provided for under useful knowledge lessons and form study, and can be thus much more effectively taught.

The lesson sheets which are provided for use in connection with Reader I. will supply a much needed want. They will afford the teacher an opportunity of drilling the class upon sentences, phrases or words in any order, and thus secure their ready recognition wherever and whenever met. Many teachers have, it is true, been in the habit of reprinting the lessons on the blackboard for this purpose, and others have sought to test the pupils from the book, but both practices have occasioned much loss of time.

The course in geography is more complete—supplying some important omissions and defining more clearly the requirements in respect of map drawing. General and not detailed geography is asked for and more attention is suggested to physical features than to topography.

The course in mathematics has been modified in some important respects. Instruction in arithmetic (not including number in the primary grades) is limited to the principles contained in the elementary text-book, except that instruction is to be given orally to pupils in Standard VIII. on the square root and its applications. Provision has been made as indicated in the course for the omission of certain portions which the teacher may deem unessential till a later stage. Considerable attention is to be given to business arithmetic, commercial forms and the practical application of rules. With respect to geometry it has been assumed that geometrical conceptions have been gained through exercises in form study and drawing before the subject is formally taken up, and hence the pupil is introduced earlier than in the original course to the logic demonstration of propositions. A small but a very important addition has been made to the requirement in algebra for Standard VIII. It is prescribed that easy equations and problems be taken up. As the common school course is completed with Standard VIII., and many pupils then leave school for life, it is very desirable that they should carry with them some knowledge of the practical application of the subject.

The requirement in Latin has been reduced. Few pupils have found it possible to overtake the allotment previously prescribed."

WHAT SHALL WE STUDY?

We do not suppose that many will dispute the accuracy of our assertion, that there are few educational questions of greater moment than the one at the head of this paper. And if we take into consideration the amount of discussion which has been expended upon it, the distinguished men in all departments of thought and activity who have taken a leading part in presenting their views on it to the public, and the issues that are involved in its settlement on a rational basis, we shall not overstate its importance if we pronounce it supreme.

A satisfactory answer to the question takes precedence of all speculation respecting methods of instruction. It embraces the instruments by which the educational wants of the community are to be satisfied, the subjects which are best fitted to evoke and cultivate the talents, tastes and character of the children and youth, and equip them for an efficient performance of the duties of life both as individuals and members of a great society. It therefore imposes upon us the obligation of specifying what subjects ought to engage the attention of the pupils in elementary schools; what higher branches ought, in addition, to be included in a course for intermediate schools, and what would be our idea of a curriculum for the university. But as study should not end when the youth leaves school or college to enter upon the business of life, it is incumbent upon us to complete our answer to the question, "What shall we study?" by offering some suggestions as to the employment of intervals of leisure, and the desirability of continuing in after life that discipline which most of all contributes to form the taste and train the intellect.

In the first place we proceed to inquire what ought to be the subjects of instruction in the elementary school? Schools of this class affect and interest every section of the people more intimately and directly than those of a higher grade. Located in every settlement, village or town they bring educative influences within the reach of the poor man, prepare his children for the occupation of farmer or mechanic, and if he has one of more than ordinary promise that child has there the opportunity of taking the first step in a career, to the possibilities of which—from the nature of constitutional government and the educational facilities of the land—we cannot set any limits. And here, also, occupying the same bench, learning the same lessons, subject to the same discipline, and competing in the same class, the son of a poor man and the son of parents in more fortunate circumstances are together stimulated to exertion, and know no rivalry but in industry and talent. Both, at this stage in their educational life, have to work together at the same lessons, whatever their prospects for the future. They must be taught to read, write and cipher. This is the fundamental duty of the elementary school teacher. But, besides, he is bound to direct his pupils to such subjects as shall promote the formation of a steadfast and honorable character, cultivate their general intelligence, and qualify them to discharge in after years their duties as citizens. And what teacher is there, who is worthy of the name, who will not spontaneously sacrifice a small fraction of his leisure, that his more talented and ambitious scholars may enter upon more advanced studies?

There is no difference of opinion respecting the necessity of teaching boys and girls reading, writing and arithmetic. All are convinced that their children must acquire a certain familiarity and ease in these exercises to succeed in any vocation whatever. But there is more involved in the trio of R's than people generally imagine. *Reading* requires a knowledge of the meanings of words and the construction of sentences, a comprehension of the subject-matter of the passage which is read, and the faculty by emphasis and inflection to express what the reader regards to be its true rendering. Hence, English grammar is an indispensable branch of study in the elementary school; and not only analysis and parsing but composition as well. To be able to write down his thoughts in tolerable English is, undoubtedly, one of the most valuable acquisitions with which a boy can leave school, whether we view it as an intellectual exercise or in its utilitarian aspect. And the lessons which he reads in his class-book introduce him to the study of biography, natural history, geography, physical science and literature. They suggest matters upon which he desires more information. Books are consulted and the teacher is questioned; and as his difficulties are solved and his knowledge increases, he can look abroad upon nature with an intelligent eye and an inquiring mind and derive both pleasure and profit from the survey. He learns to observe and think and listen with an attentive ear, and if his interest has been effectually aroused, when he leaves school and enters upon the occupation of the farm or the workshop he will find his recreation and delight in the pursuits to which he was introduced in the class-room, and the serious business of the day greatly facilitated by the possession of industrious habits and a trained intelligence.

But it is the right and duty of every man in a free country to take his share in its government. That he may do this as a well-informed, independent member of the community, and that he may vote and otherwise conduct himself as a man deserving the privilege of citizenship, he ought to understand the constitution under which he lives and the various steps by which it emerged from its primitive form, and be able to trace the struggle for liberty of thought and action, in Great Britain, by which these blessings were secured, and in consequence of which they have become our inheritance. It is incumbent upon him to know the history of the race to which he belongs, and the country of which he is a citizen. He ought to be familiar with the great questions which agitates the public mind with every measure which has for its object the elevation of the people and the amelioration of their condition, and with the plans which are proposed for the development of the trade and commerce of the country, its settlement and the opening up of its resources. Hence the necessity for the study of history and geography, not as accomplishments which lead to no practical result, but as a preparative for a full, untrammelled and manly discharge of public duty.

There are other, and for some pupils necessary, subjects which demand attention. Elementary science having particular reference to the special industry of the neighborhood, whether agriculture, mechanics, natural history, or some other branch must have allotted to its study a reasonable portion of time. Latin, also, is required by those who propose entering one of the learned professions. But instruction in this subject need not interfere with or usurp the time which might be devoted to some other purpose. Being only the grammar of the language, it can be undertaken by the whole of the senior class; and to a thinking lad, whatever his business may afterwards be, the study of the Latin grammar—from the assistance he thereby receives in understanding grammatical principles—will prove of great service in the study of his own language.

Such, with music and drawing where they can be taught, would be our course of studies in the elementary school. It is eminently practical in as far as every subject comprised in it, if rightly studied, will lead to some definite and useful end. Nor does it aim too high. Its intention is to send boys out into the world to be farmers or mechanics. Not as mere mechanics, but as well educated, thinking, reading men, and to encourage others whose ambition and ability mark them out for a different career, to take the first step in their outward course. It has been customary to talk of the farmer and mechanic as the bone and sinew of the country, but unless the education provided for them be calculated to quicken their intellect and elevate their character they will never be anything else. We believe that such an education can be based upon the course delineated above.

(To be continued.)

Atlantic Province Students at McGill.

Last month by the kindness of a correspondent at Harvard we were able to lay before our readers a complete list of Atlantic Province students at that university. Below will be found a list of students from these Provinces now in attendance at McGill University, Montreal, prepared for the REVIEW by a student from St. John. As will be seen a large majority of these are taking the course in medicine, there being no less than fifty, while in the courses in arts and science there are fifteen students, making a total of sixty-five from the Atlantic Provinces.

In Medicine.

NOVA SCOTIA.

C. P. Bissett, River Bourgeois.
H. B. Calkin, Kentville.
G. G. Campbell, Truro.
R. J. Chipman, Halifax.
J. W. Clarke, Tatamagouche.
F. G. Corbin, Bedford.
F. G. Esson, Halifax.
R. W. Fletcher, Londonderry.
R. T. Glendenning, Amherst.
W. H. Hattie, New Glasgow.
W. E. Jenkins, Conquerell.
H. V. Kent, Truro.
A. Love, New Glasgow.
A. I. Mader, New Canada.
W. S. Morrow, Halifax.
D. A. Murray, Back Meadows.
H. H. McKay, Pictou.
T. H. McKinnon, Lockport.
J. H. McMillan, Pictou.
J. Ross, Halifax.
T. H. Smith, North Sydney.
F. S. Yorston, Truro.

NEW BRUNSWICK.

G. A. Addy, St. John.
A. W. K. Akerly, Fredericton.
E. J. Broderick, "
A. D. Coburn, "
W. L. Ellis, St. John.
W. F. Hamilton, Sackville.
J. D. Harrison, Fredericton.
J. Hayes, Nelson.
DuV. Jack, Fredericton.
A. A. Lewin, St. John.
O. E. Moorehouse, Gibson.
F. X. Morris, St. John.
H. D. McManus, Fredericton.
H. H. McNally, "
J. Peake, "
W. T. Scovill, "
J. B. Travers, St. John.

P. E. ISLAND.

G. A. Brown, Charlottetown.
D. A. Bruce, Orwell.
E. J. Keir, Princeton.
M. McL. Martin, Brown's Creek.
J. M. Martin, "
C. S. Mathieson, Harrington.
D. T. McKay, Clifton.
A. I. McKinnon, Orwell.
A. McLellan, Indian River,
A. A. McLellan, Summerside.
H. S. McLeod, Charlottetown.

Arts.

NOVA SCOTIA.

J. R. Dobson, Pictou.
W. R. Ellenwood, Yarmouth.
N. McLeod, Lochsides.
T. A. Mitchell, Linden.
C. Moore, Amherst.
H. M. Tory, Guysboro.
C. J. Tory, "

P. E. ISLAND.

D. J. Fraser, Alberton.

Science.

NOVA SCOTIA.

G. C. Cooke, Canso.
G. Mitchell, New Glasgow.
J. Purves, Sidney.
A. W. Strong, Halifax.
J. P. Tuplin, Pictou.

P. E. ISLAND.

S. R. Lea, Charlottetown.
L. Simpson, Summerside.

The 750 students in attendance at the University Medical College, New York, come from all parts of the United States, Canada, and a few from Europe. Nova Scotia is well represented, there being twelve gentlemen from this province, as follows:.

A. Archibald, Musquodoboit, Halifax.
S. Anderson, Pictou.
O. F. Best, Wolfville.
M. S. Dickson, Pictou.
C. H. Eaton, Canning.
F. F. Eaton, B. A., Parrsboro.
H. M. Hare, Bedford, Halifax.
L. J. Lovitt, Kentville.
C. H. Miller, B. A., Bridgetown.
D. H. McKenzie, Pictou.
J. W. Proctor, M. D., North Sydney.
E.J. Torey, B. A., Windsor.

GEORGE R. PARKIN, M. A.

Geo. R. Parkin, M. A., recently head master of the Collegiate School, Fredericton, and now on his way to Australia as commissioner of the Imperial Federation Scheme, is a native of New Brunswick. He was born at Salisbury, in Westmorland county, in 1846. Mr. Parkin's tastes are English as well as Canadian, which may be partly explained by the fact that his father was born in Yorkshire, England, whilst his mother was a native Canadian.

Mr. Parkin received his early education in the common schools of his native place; afterwards attended the normal school of New Brunswick, and began to teach while in the seventeenth year of his age. He entered the University of New Brunswick at the age of nineteen, and was graduated three years after. Among his fellow-students were men who have risen to distinguished positions in politics and literature: Hon. Geo. E. Foster, the present Minister of Finance; Hon. Dr. Pugsley, speaker of the House of Assembly of New Brunswick; Hon. Jas. Mitchell, surveyor-general of New Brunswick; Prof. McCurdy, of Toronto, and others. Mr. Parkin was no less distinguished for his ability as a student than for the zest with which he entered into all the exercises of student life. He won the Douglas gold medal for the English essay in his freshman year—a distinction never before achieved by a first-year student; although Mr. Geo. E. Foster won it the following year under like conditions. Mr. Parkin also won prizes in natural science during each year of his college course.

After his graduation Mr. Parkin taught the grammar school at Bathurst, N. B., for four years, after which he assumed the headmastership of the collegiate school, Fredericton, which he has held for nearly seventeen years.

Mr. Parkin spent a year at Oxford (1873–4), and at the same time took the opportunity to become acquainted with the constitution of the great public schools of England. He drew inspiration from Arnold and Thring. From the former that inspiration which a great teacher bequeaths to his fellow-teachers, and which to-day influences Rugby and all England. With the latter Mr. Parkin laid the foundation of that sincere friendship which Mr. Thring acknowledged when he dedicated a volume of his addresses to "his fellow-worker over the seas."

To Mr. Parkin has been entrusted the work of writing the biography of the late head master of Uppingham school, a work on which he is now engaged, and in collecting materials for which he spent a large portion of last year in England.

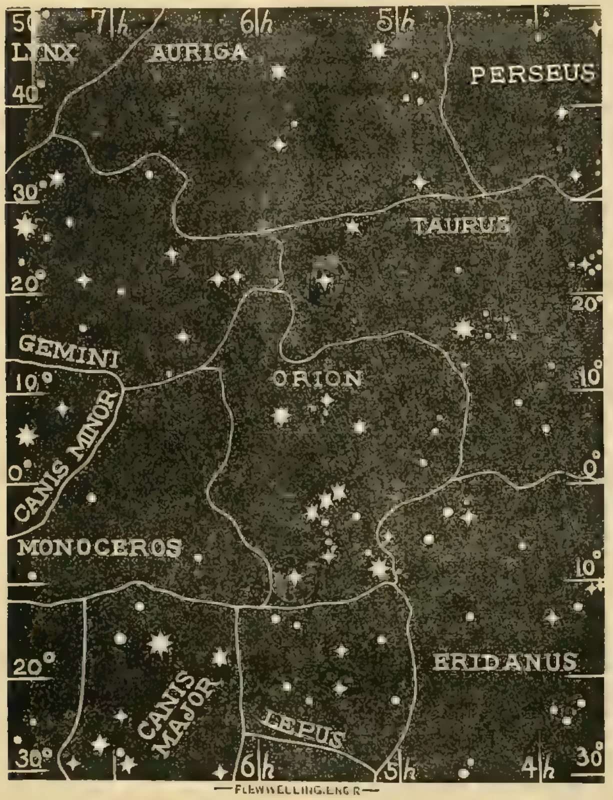
Mr. Parkin's intense energy and extraordinary capacity for work has led him in the course of a busy life to take an active part in many questions of the day. As a writer and speaker he is fluent, convincing and forcible. During his university career he was foremost as a debater, and while at Oxford was secretary of the great debating club of the undergraduates. His recent article in the *Century* magazine has attracted much favorable comment, and shows a skill in discussing a great public question that can only come from long and conscientious practice, and a power springing from intellectual activity and from deep and earnest convictions. As a teacher Mr. Parkin's influence and enthusiasm have tended to lay the foundation of character, and to promote the intellectual and moral activities of boys and girls in no ordinary degree. In the Educational Institute of the province, in which he always took a prominent part, he will be greatly missed.

In church and missionary work, on temperance and other questions of general good, Mr. Parkin has always given an active and influential support; while in social life his genial humor and ready powers of conversation always make him a welcome guest.

The selection of Mr. Parkin as commissioner to Canada and Australia, for the purpose of arousing public sentiment in favor of Imperial Federation, was not from chance. He has for years been an advocate with voice and pen of a closer union between the colonies and the mother country, and his earnest conviction of its practicability, aided by a ready eloquence, has won the attention of many statesmen on both sides of the Atlantic.

AMONG THE CONSTELLATIONS.

No. XI. ORION AND ITS NEIGHBORS.



—FLEWWELLING.ENG R—

> Look how the floor of heaven
> Is thick inlaid with patines of bright gold.
> There's not the smallest orb which thou beholdest
> But in his motion like an angel sings,
> Still quiring to the young-eyed cherubins:
> Such harmony is in immortal souls;
> But whilst this muddy vesture of decay
> Doth grossly close it in we cannot hear it.
>
> —MERCHANT OF VENICE, *Act V., Sc. I.*

Orion.

Orion was a mighty ancient hunter, according to mythology. When figured on star maps, the three stars of second magnitude, called the "Yardstick," "Jacob's Staff," or the "Three Kings or Soothsayers," represent the belt. The three faint stars of the fifth, fourth and third magnitude, which form a pendant hanging from the belt, is called Orion's sword. The two upper bright stars are in the shoulders, and the two lower are in the feet.

The first magnitude star in the shoulder is Alpha Orionis, generally called *Betelguese.* It is a telescopic double and slightly variable. The second magnitude star in the other shoulder is Gamma, generally called *Bellatrix.* The equinoctial line passes immediately above the highest of the three seconds in the belt, which is Delta, and is both a telescopic double star and a variable one to the extent of half a magnitude. Epsilon is the next second, about a degree distant; and Zeta is the third second magnitude star, about one degree from Epsilon. Zeta is a telescopic double star of the second and sixth magnitude.

The middle star, Theta, of the three forming the sword, is in the region of the most striking nebula in the heavens, the "great nebula in Orion." The third magnitude star below it is Iota.

The first magnitude star in the foot is Beta, called *Rigel.* The third magnitude star in the other foot is Kappa. The third magnitude star in the head is Lambda. The full names of these stars are, of course, Kappa Orionis, Lambda Orionis, etc.; the name of the individual star being put before the genitive case of the constellation, meaning in English respectively Kappa of Orion, Lambda of Orion, etc.

Canis Major.

Alpha Canis Majoris is the brightest fixed star in the heavens. It is called Sirius, and also the Dog Star. It is a double star, having an eight and a half magnitude companion. Beta is the second magnitude star next. Delta and Epsilon are the second magnitude stars below.

Lepus.

Lepus, the hare, has two-third magnitude stars, Alpha, the upper, a double, and Beta, the lower, a multiple star. There are six stars of the fourth magnitude. The proximity of Orion the hunter, the Greater Dog, and the Hare in the celestial field is very suggestive.

Eridanus.

The five third magnitude stars in the constellations going from left to right are Beta, Nu, Gamma, Delta, and Epsilon Eridani.

Canis Minor.

Alpha Canis Minoris, of the first magnitude, or Procyon, as it is called, forms with its neighbor Beta, of the third magnitude, a couple of stars bearing some resemblance to the couple in Gemini.

Gemini.

Beta and Alpha Geminorum are respectively of the second and first magnitudes, and are called respectively Castor and Pollux. This constellation lies on the Zodiac. Castor is one of the most beautiful double stars (magnitudes 2.7 and 3.7), only five and one-half seconds apart. A small telescope will separate them. They revolve around each other once in one thousand years. Pollux has a number of very faint companions. Its third magnitude stars in order from left to right are Delta, Epsilon, Gamma, Mu, and Eta.

Taurus.

Alpha Tauri is a first magnitude star. It is known as *Aldebaran*, is reddish in color, and is situated in a cluster called the Hyades. The Pleiades, with one third magnitude and five fourth magnitude stars, is on the margin of the map, over 20° north declination. The brightest star in the group is known as Alcyone, and has been supposed to be the centre of our universe, about which our sun and the fixed stars may be revolving in tremendous circuit. Beta (Nath) is near the boundary of Auriga, and nearly below it is Zeta, of the third magnitude.

Auriga.

Alpha Aurigæ (Capella) is a splendid first. Beta is a second magnitude. The thirds are Theta and Iota, reading from left to right.

The Sun's Course.

In the third week of May the sun will appear just where 20° is marked on the map, right below the Pleiades. On the first of June it will be just below the fourth magnitude star, under the word Taurus. On the 21st of June it will cross the line 6h. R. A., and pass close above the two third magnitude stars, Eta and Mu Geminorum. On the first of July it will be nearly below the next third magnitude star, Epsilon Geminorum, and two or three days after the middle of July it will pass out on the left margin of our map near 20° N. D.

Astronomical Notes.

Venus is still the glory of the western sky. On the first of the month it was near the extreme eastern boundary of the constellation Pisces, and in the neighborhood of Alpha (second magnitude), and Beta (third magnitude), and Gamma (fourth magnitude), of Aries, which were a little above or to the north-east of the planet. Greatest brilliancy, March 25th.

Mars is still in Pisces and will not touch the boundary Aries until about the end of the month, when it will be near after sunset.

Mercury passes from Capricornus into Aquarius, about the 15th as a morning star.

Jupiter will be in Sagittarius, a morning star, culminating about five and a half hours before the sun on the 20th.

Saturn is an evening star in Cancer, near the boundary of Leo, nearly in the middle of a straight line from Epsilon Leonis and Alpha Cancri—near the latter. It is nearly stationary, but moving slowly towards the west and north during the month.

The moon enters upon the field of our star-map March 7th. On the 8th it will pass through the Hyades; on the 12th it will leave the field in Gemini, about 22° N. D. It will re-enter again April 4th, and on the 5th pass above the Hyades, leaving the field in Gemini a shade higher up.

FERNDALE SCHOOL.

No XX. The Canadian Pine Grosbeak.

Pinicola Enucleator Canadensis (515, A. O. U.)—1/3 Natural Size.

Do you ever think what wondrous beings these ?
  Do you never think who made them and who taught
The dialect they speak, where melodies
  Alone are the interpreters of thought ?
Whose household words are songs in many keys,
  Sweeter than instrument of man e'er taught.
LONGFELLOW—*The Birds of Killingworth.*

T. You have seen this bird which is so naturally mounted for us, and during the present winter, too. What do you call it ?

CHORUS. Robin! Winter Robin! Grosbeak! Pine Grosbeak!

T. You should know better than to call it a robin. Its bill, or the color of its red breast should make that very evident. Sometimes we hear of the arrival of robins in our country newspaper, when some one has only seen a flock of the Pine Grosbeak. Its name indicates that it is most at home in the forests among the—

CHORUS. Pines.

T. Yes, it is a "pine dweller" (*pinicola*), it likes the tender buds of the pine and fir, and is also able with its strong beak to shell out their cones; hence it is a "nut sheller" (*enucleator*). It is slightly different from the European species, therefore it has been dubbed the Canadian Pine Grosbeak.

S. What does "grosbeak" mean ?

T. What do you think ?

S. Perhaps "great beak," because it looks so stout and strong.

T. Very good. Let us measure our specimen. How long?

S. About eight and a half inches.

T. Here is the male bird; describe its color.

S. Its head, a part of the back and all its breast is a bright rosy-red nearly.

T. The wings and tail?

S. Are blackish, with whitish edgings on the most of the feathers.

T. Here is the female. How does it differ?

S. It has a sort of an olive, ashy grey color where the male has a bright red.

T. When you find them here in winter where would you expect them to breed?

S. Somewhere further north in summertime. What kind of nests have they?

T. They say they are made of small twigs and rootlets, lined with finer fibres of grasses and the like. Eggs (generally four) pale greenish, blue spotted and blotched with dark brown markings and lilac shell spots. The egg is about an inch long and three-quarters of an inch thick. But let us look at the strong, conical bill. This stout, conical bill is more or less like the bills of the finches, buntings and sparrows, and is well adapted for crushing small seeds.

S. Is there a name for that kind of bill?

T. Yes. *Conirostral*, which means cone-billed. You can also notice that the line between the upper and lower half of the bill is not straight. It is turned downwards near the corner of the mouth. The conirostral birds, although very merry, are all more or less "down in the mouth," literally. What do you notice about the feet?

S. Three toes in front and one behind grasping the limb on which it is perched.

T. Yes; it may be called a "Percher." The bare part of the leg, just above the toes, is called the *tarsus* in all birds. Notice its plated covering.

S. What are "Perchers"? Do not all birds perch?

T. The structure of the feet of some, you observe, are better fitted for grasping a perch than others. In the case of our specimen the adaptation is very perfect; and all such birds we shall put into a class or *order*, as it is called, the "Perchers" proper.

S. How many *orders* of birds are there in Canada?

T. Fifteen. The fifteen *orders* are also represented in Nova Scotia.

S. How many different kinds of birds are in Canada and in Nova Scotia?

T. In all Canada a few over 550. In Nova Scotia alone about 240.

S. How many of these belong to the order "Perchers?"

T. In Canada, about 230; in Nova Scotia alone, about 90.

S. The "Perchers" must be a very large order, for it contains more than one-third of all the different kinds?

T. True. And they are divided into two sub-orders, the "songless perchers" and the "song perchers." There are only about a half a dozen of the former, while there are over eighty of the latter known in Nova Scotia. To which does the pine grosbeak belong?

S. To the song perchers. How many Nova Scotia song perchers belong to the conirostral family?

T. About two dozen. The family is known as the *Fringillidæ*, and includes the finches, cross-bills, red-poll, snow bunting and sparrows, as well as the grosbeaks. At least a dozen of the *fringillidæ* are so common in Nova Scotia, New Brunswick and Prince Edward Island, that every school boy should know them by their proper names.

We shall take the American robin for our next lesson. It belongs to another family of the song perchers.

Plants in their Homes and in the School Room.

No. 1. Methods—Observations—Records.

By all means begin the study of plants this month, and let the following plans, among others that the practical teacher will readily make for himself, be carried out:

First. Let every pupil have before him a specimen of the plant or plant part that is the subject of the day's lesson.

Second. All pupils, whether of the lower or higher grades, should be taught to examine the specimens and record their observations in notes, to be carefully written out afterwards with the specimens before them. They should be encouraged to make drawings of the objects, and to find out and record upon more minute examination after the lesson additional particulars to those brought out in class. Encourage them to ask questions, but be careful not to tell them what they should find out by careful trial. A discovery made by themselves will encourage them to search, and will tend to form the habit of closer observation.

Third. Let the pupils make a collection of the plants in their neighborhood, to be kept in the school room, which may be added to by future classes in the following years, and which in the end will be a thoroughly representative collection of the plants of the neighborhood. Read what is said on the subject of local museums in the December number of the REVIEW. Let there be a generous emulation in school districts to begin such a collection this spring, and record the results in the REVIEW for December, 1889.

But it may be said in regard to the first plan proposed above, there are no specimens obtainable now while the snow is on the ground. Are there not? Lift up your eyes! If the fields are not already green they will be very soon. In a few weeks there will be such a luxuriance of vegetation that there will be a temptation to attempt too much, which will be fatal without the careful preparatory work which the weeks of March and early April will afford time for. In No. II. below will be found an outline for plant study that will occupy a week or two. Remember that if a large collection of the district flora be attempted this season there should be a systematic study of comparatively few species. These species should, if possible, represent the most abundant families and genera growing in the neighborhood. The pupil should be taught from one thoroughly mastered species to group round it others belonging to the same family. Take, for instance, the strawberry, violet, trillium. After a complete study of the characters of each he will be able to recognize other members of the rose or violet or lily family. Some there will be among the pupils who will be able to proceed much faster than others. Encourage these in all possible ways to independent research and study, but be careful that the general class work is carried on as indicated above.

Assign no lessons in the books at first. If home lessons are given let them be based on the study of the specimens before the class—to write notes, make drawings, and to more fully investigate certain points that the teacher may deem it wise, for the sake of creating a livelier interest, to put off for the next lesson, inciting the pupils to solve these problems for themselves. Thus they will naturally turn to the text-book for relief, and the teacher will soon see how much more attractive the book will become than if he had assigned a dull lesson to be committed to memory for a still duller recitation. Dr. Bailey's little text-book on "Natural History," and Gray's "How Plants Grow," will be found very useful for such reference.

No. II. A Child's Garden—Leaves and Flowers in Their Winter Homes.

There is something in the breath of spring that irresistibly tempts us abroad—to explore the cool woods; to linger beside the swollen stream, whose rushing waters are the sound of sweet music in our ears; to penetrate the narrow ravine, where the early spring flowers are found side by side with the late snows of winter. How fully do we all enjoy this return of life to earth!

To heighten the enjoyment that this awakening life brings, show how these plants begin life, how they expand and blossom, and finally die after bringing their seeds, which promise a renewal of themselves, to perfection. This will be the work of a whole season. But let us anticipate nature, so that we may be prepared for that rapid and mysterious change, which the unassisted eye may pass over without getting an adequate glimpse of its meaning.

Last summer, perhaps before the days began to shorten and the cooler breezes to show signs of the coming autumn and winter, the plants were making provisions for their renewal this spring. In each seed, born of the parent stem, there was the germ of the future plant snugly folded up with a store of food provided to begin its new life. Each leaf and flower, soon to burst forth in beauty and luxuriance, were snugly folded up "in their case russet and rude," defiant of the rough blasts of winter, and only waiting the life-giving rays of the spring sun.

Now, to make this picture real, in the first place let the children plant seeds of the bean, or pea, or maple, and side by side with each of these a seed of oats or Indian corn. Flowerpots or little boxes filled with fine earth or clean sand, as directed in the REVIEW for April last, may be used. Every pupil should have such a garden of his own. Sheets of blotting or any porous paper may be used for germinating seeds. Be careful to keep them in a place where the temperature is even, not too hot nor too cold, and supplied with sufficient moisture, and placed as often as possible in sunny windows. After two or three days make another small plantation of a bean and an oat, and so on until several successive plantings have been made. These will illustrate the lessons we have in view for the April number of the REVIEW, showing the growth of dicotyledonous and and monocotyledonous plants.

While these plantings are being made, have the pupils bring in for class work some twigs of poplar, horse-chestnut, dogwood or other trees that have large leaves which come out early in spring. The teacher should make a careful survey of the neighborhood first. Then he may accompany a few of the older scholars, directing them to bring in what is desired for the first lesson. Suppose it is a twig of the poplar tree. Begin the talk about leaves. Will the leaves of last season reappear on the trees this spring? How do you know they will not? When are the leaves formed that are soon to appear? Is there anything upon this twig that looks like a leaf? During this close examination of the twig, the layers of bark, wood and pith, may furnish subjects for investigation. When the pupils have found out that the little brown cones are the only possible places where the leaves may be hiding, the first lesson should be brought to an end, and they may be told that it is a game of hide-and-go-seek between them and the leaves. If their interest has been fully aroused they will have enough to tell you at the next lesson. How they pulled off the outer layer of the bud—the little brown overcoat, and next the little flannel jackets and snug blankets, and what they found warmly ensconsed inside.

Have the scholars bring home during the early days of April some branches of willow, put them in water, and they will be ready to illustrate what we yet have to say on buds.

[For the Review.]

A Need of S. P. C. A. Work in Italy.

Two books there are that I should very much like to see translated and in the possession of everyone. These are "Chapters on Animals," by Philip Gilbert Wammerton, and "Black Beauty—the Autobiography of a Worker," by Anna Sewell. This last mentioned work has indeed been recommended by the Royal S. P. C. A.; and I notice from the volume lying before me that it has already reached its twenty-first edition—so popular has this little work become.

Its authoress, a hopeless invalid for years, never lived to see the good results of her work.

In England and America on every hand one sees the beneficial results that have accrued to all our domestic animals through the enforcement of laws made on their behalf. It was during a winter's residence in Italy that I noticed a contrast to this happy state of things. In this charming land of art and song I could not but notice how much the brute creation had to suffer; they seemed to have no redress whatever from man's cruelty. The one argument an Italian has to offer when remonstrated with is always, "We is no Christian."

Fancy, if you will, a glorious day in early spring on the shores of the Bay of Naples, in the vicinity of Sorrento, where the beauty of the scenery almost baffles description. In the midst of one's enjoyment the heart is saddened, perhaps, by the sight of a poor half-starved horse, drawing a "caleche," containing no less than fourteen people on their way to some religious "jesta"; who, in their mirth, seem all unconscious of the sufferings of the poor sore-covered animal, goaded on, probably, by some half-drunken driver; and this cruel treatment to both horses and dogs might be witnessed daily.

Speaking of the French peasantry Wammerton says: "I have seen a great deal of the life of the French peasantry, but never to this day have I seen a peasant caress his dog otherwise than with a stick or a wooden shoe. There are countries"—he goes on to say—"where the dogs are never fed, where they are left to pick up the vilest refuse, and where they walk like gaunt images of famine, living skeletons, gnawing dry sticks in the wintry moonlight, doing nature's scavenger work like rats. Yet in every one of these miserable creatures beats the noble canine heart: that heart whose depths of devotion have never yet been sounded to the bottom; that heart which forgets all our cruelty, but not the smallest evidence of our kindness."

But, after all, one cannot wonder very much at the treatment which the lower animals receive in Italy, when even the women are obliged to work like beasts of burden. It is a common sight to see the women toiling up the mountain sides underneath heavy bundles of poles, and huge baskets of manure, which would almost prove too much for an ordinary Canadian laborer. Of course there are liberal-minded Italians who deeply deplore this state of things, and yet at present see no direct road out of it.

One can only hope and trust that the closing years of the nineteenth century may see not only an Italian S. P. C. A. started, but also a Ladies' Auxiliary.

A. W.

For the Review.]

SCHOOL SAVINGS BANKS.

The Dartmouth School Savings Banks were established in December, 1887, under authority of the Town Council. The first bank was opened on December 5th, 1887.

The following is the treasurer's statement:

Total amount deposited from Dec. 5th, 1887, to Dec. 3rd, 1888, ...	$1,407 36
Interest on general account to June 30th, 1888, ..	2 94
	$1,410 30
Amount transferred to individual accounts of pupils in Post-Office Savings Banks, ...	$1,003 00
Amount withdrawn by depositors, from School Banks, ...	90 68
In Bank on deposit, ...	316 62
	$1,410 30

The depositors number about 700, and the transactions several thousand.

All this work has been voluntarily done by the teachers outside of school hours. In fact it would have been impossible to have made them the success they are if the teachers had not displayed the best spirit and given them every attention. Everything is due to their energy and careful attention. The work being entirely new required considerable time at their hands, which was cheerfully given.

The great number of depositors shows that the amount deposited to credit of individuals, is, on the average, small; this, however, is a good omen, showing, as it does, that the money deposited is in general saved by the children, and not merely money placed to their credit by indulgent parents, who have given them the money for that purpose.

The bank accounts are regularly audited and the interests of the pupils fully protected. As a first step in industrial education it is important, as pupils are encouraged to earn money regularly, and not to depend entirely for funds on their parents.

The arguments in favor of such institutions, especially in cities and large towns, are convincing and conclusive.

An extract from *Harper's Bazar*, reprinted in the Report of the Commissioners of Education, Washington, says, in speaking of their adoption—"They have added to the curriculum a continual object lesson in thrift, industry and self-denial—a practical lesson, which without pushing any theoretical instruction out of its way, can do more to undermine the dangerous communistic spirit of the age than any amount of mere book learning." The commissioner, in his remarks on their adoption, calls them "valuable helps to national education."

He remarks that for two years, 1885–7, only six banks were established, but that at least one hundred would be in operation in 1888. He squarely endorses them and gives a sketch showing how they are worked and a *resume* of the work done by them in various countries in the old world. France had, in 1886, 24,000, with savings aggregating $2,400,000; Italy, 3,456; Hungary, 700; England, only 2,000 in 1886, but now the number is at least three times as great. Last year London established a bank in every school under its control.

I have before me the 18th annual report of the Liverpool Penny Savings Banks, which states that in 1888, 180 banks were in operation, with 758,207 transactions. They have received £24,518 3s. 2d.; withdrawals, £18,971 8s. 4d.; transferred to Liverpool Savings Bank £5,402. Balance on hand £8,808 14s., due to 51,891 depositors. They have opened 1,531 accounts in the Liverpool Savings Bank, for depositors whose deposits had reached the limit, and this shows a large increase over previous year.

They have had great success in all the large cities and are now being generally adopted. This article must necessarily be too short to give many arguments for their establishment, but if the subject is of interest to any of your readers, I shall be pleased to furnish them with all desired information.

Step by step we are taking advanced ground, and with a free kindergarten in every large school, and kindergarten methods introduced into all primary schools, we will have, with school banks, two of the greatest lessons in economy, system, industry and culture, that can be given to the young in industrial education. No educationist will deny that a well educated and industrious person has within himself the conditions that will give him a prosperous and contented life,—a life that will help to make the world better and richer. We think that these institutions will do much to bring about these conditions, and, therefore, all efforts should be made to have them established.

Yours truly,

H. S. Congdon.

Dartmouth, N S.

For the Review.]

Music in Schools.

Music by general consent forms an important part of the course of study. Its utility in voice, culture and physical development, in improving discipline and brightening school life makes it most desirable—almost necessary in every school-room. Rote-singing partially secures a few of these advantages. As a rule, however, it is in a quality of voice to which it is not agreeable to listen. "*Music* implies *sweet sounds.*" The musical training in our schools should improve the quality, tone and compass of the voice, make the ear sensitive to nice discriminations of sound, and increase the pupils' love of good music and their capacity for the enjoyment of it.

How can these important results be secured without taking too much time from other studies and without specially skilled teachers? This question has been completely answered in Great Britain, Paris, Toronto, New Jersey and other parts of the United States. For some time a natural prejudice caused me to favor the Staff Notation rather than the Tonic Sol-fa system, but I have been compelled to a different conclusion within the last eighteen months.

1. Some of our teachers have adopted the Tonic Sol-fa, and have produced results by it unattainable by the old system, unless by five times the labor and time, and in the case of some primary departments altogether unattainable.

2. In England, Ireland and Scotland, where the mass of the people are much more musical than in America, and where music has reached much greater perfection, the Tonic Sol-fa is almost universal.

3. It is rapidly gaining ground in America; 500 American and Canadian teachers have declared emphatically in its favor.

4. I have not heard an adverse opinion from any person acquainted with both systems, and therefore qualified to judge between them.

5. For school purposes the Tonic Sol-fa possesses this important characteristic, that special musical talent is not necessary to teach it successfully.

Mr. Anderson will give a course of fifteen lessons or more on the Tonic Sol-fa system for the special benefit of teachers. Classes will be formed and the preliminary lesson given on Monday, the 4th of February, at 4.30 in Brunswick street school. The fee will be $1.50 for the course. You are respectfully requested to be present. Any required explanation will be given and objections answered satisfactorily.

A. McKay.

Halifax, 31st January, 1889.

In response to the above circular, seventy-five of the Halifax teachers took the course. Three "intermediate" certificates were granted, six "elementary" and over fifteen "junior." At the close of the course a society was formed for continued practice and instruction. The teachers and commissioners were much pleased with the system, and believe it can perform all that it promises—that it is at once the most scientific and simplest introduction to vocal music. A. M.

The New Biology—A Review.

The New Biology; or, The True Science of Life, by M. J. Barnett, author of "Practical Metaphysics," "Health for Teachers," "Justice of Healing Power." Boston, H. H. Carter and Karrick. 1888.

This volume, of some 145 pages, reflects the usual credit on the printer and the binder. We have been unable, however, to discover any biology or science in it, although the star blazes ostentatiously from within the gilded equilateral triangle on its cover. The author very prettily introduces scriptural allusions and modern conclusions into well put ethical exhortations. Many portions of the book, nearly whole chapters, are filled with gems of this kind; but the "spiritual science" is the most trashy matrix of fancy which ever enclosed a jewel of thought.

There has been an astronomical science based on the hypothesis of the earth being a stationary plane around which the heavens revolved. The hypothesis explained satisfactorily ninety-nine out of a hundred facts noticed by these crude observers. Our five-year old, we have just discovered, thinks the world comes to an end in the distant horizon, and that the edge of the world is like the sides of a great ship over which perpetual banks of cloud keep rolling. All the different countries of the world, alluded to in conversation, suggested by the newspaper or correspondence from abroad, have found with him a locus within the cloud-covered cliff, which bounds the world. His ideas appear simple and clear to him; but how a person travelling east on the surface of the world would at last be seen approaching his home from the west is very mysterious. Mr. Barnett's theory no doubt appears to him so logical that he cannot help believing it to be the true science of life. We must wait for him—as for the child—until he knows something more of the world. A scientific theory, which explains a hundred phenomena but which is contradicted by one, is false. "Spiritual science" (so-called) appears to explain one phenomenon in the hundred we admit. "It is a science," we are told on page 141, "whose whole tendency is to refine and elevate, and it offers the only perfect freedom to all, irrespective of race, color, creed, or sex. For you to antagonize this science would appear as if you were desirous to enslave woman and encourage despotism in man."

Well, we certainly do not wish to countenance the enslaver. In a word, the "spiritual science" fantasy is an hypothesis built purely out of the imagination. He is very positive. Chapter IV. opens thus: "The material world is created by the spiritual world, and corresponds to it, as the shadow corresponds to the object that casts the shadow. Swedenborg says that the whole natural world corresponds to the spiritual world; and not only the natural world in general, but also in every particular." His proof is the authority of Swedenborg. Who could be a better authority? The man who visited heaven and hell and gave us minute descriptions of them in good faith; who saw with his own eyes the last judgment in the year 1757 or thereabouts, and while he saw King George of England in heaven he discovered the Apostle Paul in hell, must be a good authority. Here are some specimens of the theory of correspondences: Physical blindness corresponds to spiritual blindness, physical deafness corresponds to spiritual deafness." All bodily disease comes from the corresponding spiritual disease. Heal the spiritual and you heal the physical disease; and examples known to the author are given as evidence. Here is some of the biology: "We all know that the affections act on the heart, etc." "It has been noticed that the intellect acts upon the lungs." "The memory seems to be connected with digestive organs." When the mind is so inharmonious that it cannot throw off harmful or useless conditions, when it clings to its errors, the excretory organs will be found unable to perform their functions in throwing off harmful or useless material from the physical body. The organ of hope, for example, is said to preside over the liver; melancholy, which is inverted hope, causes the liver to be slothful in the performance of its duty. Caution is said to preside over the ear. This is a specimen of the true science. At the commencement of the chapter the correspondences were stated as a total, without the shadow of a doubt. But when the particulars are mentioned the author can only say, "It is said."

If he were to condescend to still further particulars known to nearly every eight grade Canadian school boy, his faith would certainly be clean swept away. But the science is based on induction.

Here is an example: "It is well known in medical practice, that those who indulge in impure thoughts—which leads to impure acts—will reflect a corresponding impurity in their bodies in some eruptive and loathsome disease. It is also known that they who indulge in inflammatory thoughts, create inflammatory diseases in their bodies." A young girl was suffering with that distressing malady called asthma ..... How did she create it? The healer, who took charge of her case, felt sure that there must be a corresponding condition of mind back of it as a cause. She soon learned that the young girl, though living in the midst of agreeable people, even of her own age, was, nevertheless, very lonely, that her highest thoughts and best feelings were repressed. The best part of her nature was shut in and stifled, just as her lungs were stifled in breathing ..... The healer, of course, ignored her difficulty in breathing; for it had indicated the real malady and was of no further importance. Like a true physician she urged her to open her heart and her mind, and her breathing would take care of itself." Of course she was cured!

Again, "disease does not perpetuate itself; it is kept alive by conscious or unconscious mind in dominion over it." "Old age has no existence for us, except among the falsities of our erroneous thought."

Again, and let the spectacle-wearer take heed (see page 3), "Physical blindness corresponds to spiritual blindness. Failure of physical sight corresponds to an inability to continue to see the truth. There is a universal failure to see truth as governing the reconstruction of our eyes. In youth we expect to have good sight; we fully believe it to be our right. In old age we have permitted our belief in truth to be argued away from us."

We have said that we were unable to discover any science in the book, much less *true* science. Nor have we discovered any biology, much less *new* biology. In fact it is the oldest biological system in America—the identical philosophy of the medicine men of the Red Indian. Only the method of the medicine man, with his rattles and other palpable aids to "spiritual" excitation, healed more than Mr. Barnett's method; and the Indian form of the hypothesis of spiritual correspondences was not so entirely out of joint with the common knowledge of mankind.

Education consists not quite so much in the amount of information imparted, as in the careful training and discipline of the intellectual and moral powers—such a co-ordination of the faculties as will enable the child to think and work out problems for himself in after life.

To The School Boards in the Atlantic Provinces.

A Plea for the Introduction of the Kindergarten.

My deep interest in the cause of education leads me to make a plea in favor of the kindergarten as an integral part of our common school systems in these provinces.

In all our cities and towns the most pressing question for settlement would seem to be: How shall we reduce to the lowest possible degree the wastes and burdens of society that press upon us increasingly? Clearly, by making every individual in the community intelligent, virtuous and wealth-producing.

Does our educational system compass this end? Let the expenditure rendered necessary by crime and pauperism answer that question. How comes it that our system does not prevent this waste of humanity?

For two reasons: first, its training has been *too exclusively literary*, a defect inherited from the past which ignored *popular* education, and, as a consequence, adapted its curricula and methods to the wealthy and those preparing for professional life. Secondly, to an disregard of the fact that labor in its simplest forms is *subject to law* and needs the application of science, if it is to rise to its true dignity and cease to be mere drudgery. When we all honestly believe that earnest, skilful, joyous *work*, is the divinely appointed means for the development of human faculty and character, and act accordingly, we shall solve a good many hard problems.

Pestalozzi's great loving heart made him the *father* of *popular education;* his watchward, a glorious one, was, *to know;* but Frœbel, agreeing with Pestalozzi as far as he went, goes *far* beyond him, and gives us his rallying cry, *education by work.*

Taking the hint from nature, which has made the child full of curiosity, eager for knowledge and perpetually active, he demands education from the earliest period; education of every faculty in every possible direction; education of the individual, not only as a unit, but as a member of society, which he is to enrich, strengthen and adorn. He has not only given us a clear and distinct aim, *harmonious development,* but he has systematized the means of attaining it, and shown us how we may press science into the service of child-culture during that early period that has, hitherto, been largely left to chance and instinct.

Frœbel would have the mother instructed in her duty, so that she may be competent to prepare her child to enter the kindergarten when three years old. At this age, the social instincts need a larger sphere for their gratification than the family affords, and, under wise culture, they become a powerful aid in his education. At present, the necessity of the kindergarten proper has not become apparent to our people; they need educating up to it.

The most effectual way to create a demand for it would seem to be by the introduction of its methods and principles, and, above all, its genial spirit, into our primary schools, which certainly stand in need of training and instruction more in accordance with child-nature. The *heuristic* method (finding out) of gaining knowledge and faculty, which is carried on by handling objects and submitting them to the careful observation of the senses, is applied in every possible way by Frœbel with inexhaustible ingenuity. Color, form (of the ball), motion, direction and position, are learned by the six colored balls of the first gift. The ball-games played in groups conduce to dexterity and precision of aim.

The second gift shows the three fudamental forms, ball, cube and cylinder, together with the *apparent* changes in form of the two latter under certain conditions. The boxes of the next four gifts, consisting of cubes and bricks, two boxes of each form, *whole*, and two *divided*, develop constructiveness and orderly arrangement in building. They are also made the medium of lessons in number and geometric form. The square and triangular tablets, sticks, seeds or Mrs. Hailmann's lentil dots, with the occupation of perforating paper with a small needle, lead logically from the solid bodies to surfaces, lines and the point, and afford a firm basis, further on, for mathematical abstractions.

In paper-cutting and pasting, paper-twining and paper-folding, mat-weaving, modelling in clay and drawing, the child learns to be neat and deft-handed. He also forms the habit of laying out and planning his handiwork skilfully from the very first step in the process. The kindergarten aims at free inventiveness, not mere imitation. It succeeds, too, for the productions of even very young children often surprise experienced kindergartners by their beauty and originality.

The power of the hand as the tool of the creative instinct is constantly increasing, by the daily practice of movements common alike to the artist and artisan. Go into any good kindergarten and look carefully at the hands that have had training, you cannot fail to note the firm, yet delicate touch, and facile movements. Economy is taught. "*Nothing,*" says Frœbel, must be destroyed," so in paper-cutting, the children clip carefully to the line so that they may exchange and mount on paper what would be wasted, and by judiciously combining the colors produce very pleasing ornamental forms.

A child, thus trained, will pick up and turn to account what another would pass by unheeded. The round games, often dramatic representations of trades and occupations, are such a means of enjoyment, by their rhythmic movement, accompanied by singing, that they invest labor with a halo of sentiment that will not altogether fade, when, instead of pretty mimicry, these children take up *real* work.

A good kindergarten develops and strengthens virtue by its freedom, which fosters spontaneity of expression, amidst favorable surroundings and well-adjusted conditions.

The kindergarten is a world in miniature, where the child learns to take his own weight and become conscious of his own powers. He learns, too, how and when to give up, and when and how to carry his point. If he be a born leader, he learns how to govern, in the kindly atmosphere, without domineering. He learns, too, how to obey cheerfully and without servility, not because he *must*, but because it is *right;* because he finds order delightful and the reverence for law springs up naturally. The noble work done in the free kindergartens of San Francisco and Chicago bears emphatic testimony to their harmonizing effect on the wretched homes from which so many of the children come, and to which they carry back a gospel of cleanliness, kindly feeling and love of work from day to day. If these Atlantic Provinces are to hold their own in productive industry, a kindergarten department should be attached to every graded school as the solid and only foundation of manual training. But the objection is often made that the kindergarten is too expensive; but St. Louis, the first to engraft it on the public school system, has not found it burdensome, and in the report of that city it simply takes its place among the other departments as a matter of course. But the establishment of one good kindergarten, under a director competent to *train* the teachers, would soon repay its cost many times over, in the increased efficiency of those teachers who intelligently studied and applied its principles.

It is with no small pride that I am able to tell you that Dartmouth is to open May 1st a kindergarten department, under a trained director, in our largest graded school. There is a good deal, in some of our primary schools, borrowed from Frœbel's system, and it is not without value, but there is a danger of mere formal imitation where there is no opportunity of gaining fresh inspiration by an occasional visit to a *real* kindergarten. Without an accurate standard of measurement it is easy to degenerate. I sincerely trust that the school boards of our cities and towns will make an energetic movement towards sound kindergarten training in connection with their schools. Anything I can do to further this work shall be done with hearty good-will. There is wealth and intelligence and public spirit enough, if they can only be focused, to make the introduction of kindergarten-culture a splendid success.

I remain, your obedient servant,
CATH. M. CONDON.

Dartmouth, February 28th, 1889.

THE importance of establishing a practical system of technical education is now generally recognized in Great Britain; and the Imperial government, in deference to public opinion, has decided to introduce, next session, a Technical Education bill. No explanation has been given as to the scope of the promised measure, but it is generally believed that the government will make a very liberal proposition. The subject is one which has for a long time been treated with neglect, but the increased attention which of late years has been paid to educational matters both in England and the United States has led to a through discussion of the necessity of providing technical instruction in the schools of the country, and there is little doubt that the Imperial Parliament will support the government in any reasonable proposal.

THE American system of education has again been made the subject of attack. In an article in the *Forum*, Professor H. H. Boyessen states, that after an inspection of the schools of France and Germany, he has come to the conclusion that the American schools are lamentably inferior and far from being up to the requirements of the age. One objection he makes to the United States schools, is that the training in them kindles an ambition, which, in nine cases out of ten, is disappointed, and results in discontent and a state of unrest in society. He advocates that the pupils of the schools should be taught the lesson of the dignity of labor, and that they should receive practical training in technical work. Girls, he thinks, should be taught the principles of household management and economy and sanitary science. The professor has reached conclusions which other educationists have arrived at before him.

YES—our teachers are young. Well is it in one sense, that it is so. This nation could not stand the injustice involved in the present starving wages paid our teachers—if they were older.

How much we demand of our teachers for the mere pittance we pay them.

The teacher must have infinite patience for details—knowledge of men as well as of children—foresight into the future so he can link it to present study and duty—fertility of expedients—affability of manners—energy of will—the instinct and ability to command—the confidence of the community, and a universal ability that, in other positions, would command an adequate salary for present needs and for future wants.

Do we do our teachers justice in the way of compensation?—*American Journal of Education.*

IN a school district in London there were many parents who reported no children in their families. In order to find just how many children were thus being kept from school, the school authorities got two monkeys, dressed them gaily, put them in a wagon in which was a brass band, and started through the district. At once crowds of children appeared and followed the wagon, which drove to a neighboring park, when the school officers went among the children distributing candies and getting their names and addresses. They thus found that over sixty parents kept their children from school; and as a result of the monkeys, the brass band and the candy, about 200 little boys and girls have been set at study. —*Exchange.*

THE little speck known as Sable Island, east of Nova Scotia, bids fair to meet the fate of the fabled Atlantis. On every side the winds and waves are eating it away, and the process of demolition is going on so rapidly as to make it one of the marvels of the Northern Atlantic. Two lighthouses have been destroyed, and another, some distance inland, was erected last summer to take their place. Every year shows a considerable decrease in the island's area, and the modification the debris is making in the adjacent ocean bottom render the soundings marked on the chart of that region very unreliable. All that is left of the island seems to be strewn over the ocean bed, and the fate of Sable Island will serve in school geographies as a notable instance of the destructive powers of the waves.

IT is rumored the Nova Scotia government intend introducing a bill by which they will spend $8,200 a year in bursaries and fellowships to students in county academies. Eight bursaries of $200 each are to be offered each year for about four years, and one fellowship of $600 each year for three years. The limit is to be 32 bursaries and three fellowships. The bursaries winners are to enter any Nova Scotia college or Mount Allison in New Brunswick, and holders of fellowships may study abroad for three years. Last year the provincial government reduced the grants to school teachers by about $5,000, so that this aid to higher education, if adopted, will be practically at the expense of the poor teachers.

PERSONAL NOTES.—Mr. G. H. Harrison, A. B. (Mt. Allison), has been appointed head-master of the Chatham, N. B., Grammar School.

WE regret to learn that Mr. T. A. Hartt, teacher of the Grammar School, St. Andrews, has been compelled, owing to failing health, to give notice to the trustees of his resignation,

AMONG THE ACADEMIES.

Secretary Wilson, of the Halifax School Commissioners, reported at the last meeting of the board that he went to Springhill to obtain a collection of fossils, which were to be obtained there for the Halifax Academy. He was introduced to underground Manager Henry Swift, and from him obtained a beautiful collection, consisting of about sixty specimens. The collection was on view on the table, at the meeting, and comprises particularly good specimens of neuropteris and other ferns. Also, clamaites, sigillariæ, stigmaria, lepidodendra, sphenophylla, asterophyllites, cordaites and various other grasses, and a transverse section of a tree, lepidodendron, two feet in diameter.

We have received the "Programa para 1889 (Calendar for 1889) of the "Institute Internacional," Santiago, Chili. It is a large sized, closely printed pamphlet of about forty pages. It has a very fine frontispiece photo-engraving of the staff of eight professors. Their names are given on the opposite page, as follows, under the heading, "*Cuerpo de Professores*": Sr. Gmo. Sluyter, de la Universidad de Halle, Alemania; Dr. Frederico Schneider, de la Universidad de Halle, Alemania; Dr. Alberto Meyer, da la Universidad de Marburg, Alemania; Sr. Don Antoni Diaz, da la Universidad de Madrid, Espana; Sr. Don Archibald Troop, Academia Pictou, Nova Scotia; Sr. Don Enrique Fahienbuhler, Ecole Normal, Neuchatel, Suiza; Sr. Don S. J. Christen, Director. Sr. Don Archibald Troop is a native of Bridgetown, Annapolis County, Nova Scotia.

The town of Truro, N. S., is about to proceed with the erection of a new academy. The building will contain four class-rooms with assembly hall, laboratory, museum, gymnasium and other necessary equipments. Last year they added a third teacher to their regular academy staff, as well as a teacher of music and elocution.

A strong appeal is made on behalf of the Ladies College at Halifax. Educationally and financially it has been most successful, but increased accommodation is needed, and to secure this the sum of $18,000 is required for a new building, the erection of which should be commenced without delay. The Rev. Robt. Laing has issued a circular appealing to the Presbyterians of the Atlantic provinces for subscriptions in aid of the undertaking.

We do not always get what we reach out for; but something falls to us by the effort we make that works for our want and gives us strength.

QUESTION DEPARTMENT.

Questions and Answers.

Subscriber, Shelburne Co., N. S.—1. Can I obtain nine numbers of the Educational Review, viz.: Numbers two to ten inclusive, of Volume I., and at what cost? I am anxious to have your valuable paper from the beginning.

2. How and at what time did Great Britain get possession of Bermuda?

3. What is the correct pronunciation of "seine?"

Ans.—1. We regret that we have not a single copy of the Review for August, 1887, and for March and April, 1888, and only three copies each of November, 1887, and January and February, 1888. We will allow a year's subscription to any subscriber sending us these six numbers.

2. The Bermudas—the "still vexed Bermoothes" referred to in Shakespeare's "Tempest"—said to consist of 365 small islands, were first settled by the English under a charter from James I., and a regular government was established there in 1640. So the English came into possession by priority of settlement and have retained the islands ever since.

3. Like the word "seen."

LITERARY NOTES.

Prof. Josiah P. Cooke, of Harvard, will contribute to *The Popular Science Monthly* for April an article on "The Chemical Elements," telling the story of the changing beliefs about what substances are made of, from the time when earth, water, air, and fire were thought to be the elements of all things, down to the present day, with its list of over seventy simple substances, and when the idea is gaining ground that perhaps there is only one kind of matter after all.

D. C. Heath & Co., will publish this week, in their series of *Guides for Science Teaching*, Hints for Teachers of Physiology, by Dr. Henry P. Bowditch, of the Harvard Medical School. It will show how a teacher may supplement his text-book instruction by simple observations and by experiments on living bodies or on organic material.

BOOK REVIEWS.

The First Three Years of Childhood, by Bernard Perez, edited and translated by Alice M. Christie, with an introduction by James Sully, M. A., author of "Teachers' Handbook of Psychology," etc. (New York and Chicago: E. L. Kellogg & Co., 1888. $1.25).

This is a neat volume of some 300 pages, presenting the usual typographical excellence of the work of the publishers. The subject is one of surpassing interest; not only to the parent but to those brought up in the family with younger children. It reveals a world of order in the curious and purposeless incidents of child-life; it makes the brick and rubble of commonplace experience burst into the refulgence of sunlit masses of crystallized law. The intelligent mother, the father, the kindergartner, the primary teacher—in fact everyone who has been a child, should not only be able to peruse the work with profit, but with delight. The light thrown upon this interesting stage of human life by the treatise before us, should very materially help the evolution of higher types of manhood and womanhood more in the future than in the past.

THE TEACHER'S PSYCHOLOGY. A treatise on the intellectual faculties, the order of their growth, and the corresponding series of studies by which they are educated; by A. S. Welch, LL. D., Professor of Psychology, Iowa College of Agriculture and Mechanic Arts, Ames, Iowa. (New York and Chicago: E. L. Kellogg & Co., 1889. $1.50).

This is a handsome volume of nearly 300 pages. While we feel disposed to question the manner in which some parts of this important subject is presented, we can emphatically say that it presents the subject in a most concise and practical manner. We know of no work on the subject which can be read and mastered by the self-taught student with less effort; and which, at the same time, gives so well analysed a scheme of the whole with the bearings of the science on human work, and especially on the work of education. It is a splendid compendium of theoretical and practical psychology for the teacher and the general reader.

STORY CARDS FOR PRIMARY CLASSES. Twenty lessons in reading and twenty lessons in spelling. Supplementary to any primer. By Laura F. Armitage. Boston: Eastern Educational Bureau, 50 Bromfield street. Price 25 cents by mail.

These elegant story cards are 5x8 inches, printed on both sides, each having a pretty picture and a story about it on one side, and ten words for spelling, in "print" and "script" type, with the figures on the other. They are on colored bristol board, the cards being yellow, blue and pink. The color of the card is stated, as "This color is yellow," "This color is blue," etc. Every primary teacher will find these cards of great service in teaching the little ones the art of reading. They will largely increase the interest of the pupils in their lessons.

ALLEN AND GREENOUGH'S LATIN GRAMMAR—the new edition—is highly spoken of. Some of the best classical authorities think it superior to those generally in use, and favor its adoption.

We have received the circular of PHYSICAL CULTURE, for home and school, scientific and practical, by D. L. Dowd, Professor of physical and vocal culture, 16 East Fourteenth street, and Miss Brown's school for girls, 713 and 715 Fifth Avenue, New York.

TEACHERS' MANUAL NO. II.; THE ARGUMENT FOR MANUAL TRAINING, by Nicholas Murray Butler. E. S. Kellogg & Co., New York and Chicago. This little pamphlet presents, in a few pages, the theory and history of manual training, with an appendix containing a practical plan of manual training, which may be adapted to the ordinary school.

THE TREE OF MYTHOLOGY. A study, by Chas. De B. Mills, Syracuse, N. Y.; C. W. Bardeen, publisher. This is an exceedingly instructive book, dealing with the origin of heroic legends, mythical heroes, folk-lore, etc. It seeks to ascertain something of the origin, nature and growth of a myth, what it primarily was and what has come of it. To the student of historical literature, especially, it is almost invaluable.

BOOKS RECEIVED.

From D. C. Heath: The following French and German classics (with notes and vocabularies) Lamartine's Jeanne d'Arc; Souvestre's Confessions d'un Ouvrier; and Schiller's Jungfrau von Orleans. From C. W. Bardeen: Cyclopædia of Education; Orthœpy Made Easy, a royal road to correct pronunciation. From Eastern Educational Bureau, Boston: Elementary Chemical Technics. From MacMillan & Co., London: Virgil's Æneid, Book II, of the Elementary Classics Series.

EXCHANGES.

George Kennan's article in *The Century* for March is more than usually interesting. "The English language in America" is an interesting article for students.....Prof. Goodale's articles on the principles of botany are continued in *Forest and Garden*. The excellent features of this journal are its many useful articles on horticulture and forestry. Published by D. A. Munro, New York.....*St. Nicholas* for March is a superbly illustrated number.....*The Popular Science Monthly* for March has three articles of great interest to teachers, "The Chemistry of To-day," "Natural Science in Elementary Schools," and "The Aryans in Science and History." ....*The Dominion Illustrated* contains a full page engraving of the Dalhousie College Foot-Ball team (15) from a photograph of Notman's. The team is nearly altogether made up of old Pictonians ...In the N. B. *University Monthly*, for February, is a well considered article on the importance of professors of our universities appearing on public platforms and in the high schools of the province as often as possible. ....*Gripsack*, (published by Knowles and Reynolds, St. John), for March, has just been issued. It is an excellent number, full of interesting facts and fancies for those who stay at home as well as for those who travel. The publishers deserve a cordial support from the public.

VACATION.

A man who has had a successful experience of eight years as a teacher of the first-class, or Grade B, in the public schools of Nova Scotia, and who also holds a New Brunswick license of the first-class, and a diploma (superior) from the Truro Normal School, is engaged in private study in preparation for academic license, but wishes to teach for a few weeks.

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R. V. JONES, M. A., Ph. D , Professor of the Greek and Latin Languages.
REV. E. M. KEIRSTEAD, M. A., Professor of English Literature, Logic and Psychology.
A. E. COLDWELL, M. A., Professor of the Natural Sciences, and Curator of the Museum.
L. E. WORTMAN, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.

The Forum continues to hold its place as the foremost of our magazines for the variety, the value, and the weight of its contributions.—N. Y. Times

THE FORUM.

A REVIEW OF LIVING SUBJECTS BY THE FOREMOST WRITERS.

THE FORUM is a monthly review, every number of which contains eleven original essays on the most important serious topics of the time, by the best writers of both hemispheres. Its contributors during the last two years included more than 200 writers, (A list of them will be sent to any address on application.) Among them are: ARCHDEACON F. W. FARRAR, PRESIDENT JULIUS H. SEELYE, PROFESSOR JOHN TYNDALL, JUSTICE T. M. COOLEY, PROFESSOR EMILE DE LAVELEYE, PRESIDENT FRANCIS L. PATTON, ANDREW D. WHITE, EDWARD ATKINSON, SENATOR GEORGE F. EDMUNDS, MAJOR J. W. POWELL, PRESIDENT FRANCIS A. WALKER, W. H. MALLOCK, PRESIDENT TIMOTHY DWIGHT, W. S. LILLY, PROFESSOR FREDERIC H. HEDGE, CHARLES DUDLEY WARNER, BISHOP F. D. HUNTINGTON, GEO W. CABLE.

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The Forum gives equal prominence to each side of every debatable subject. It is not influenced by any party or school or sect. Its owners are a company of scholars whose aim is to further and to present the latest investigations and the soundest conclusions of the foremost workers in every department of thought.

More editorial discussions in the press are suggested by the Forum than by any other periodical. The New York *Herald* says of it, "The Forum has done more to bring the thinking men of the country into connection with current literature than any other publication." And the Boston *Herald*, "The Forum has taken the foremost place in public discussions because it has dealt with important subjects honestly, impartially, and at the hands of those who know something about them." 50 cents a number; $5 a year.

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A. H. MacKAY, B. A., B. Sc., Editor for Nova Scotia.
ALEX. ANDERSON, LL.D., Editor for P. E. Island.
G. U. HAY, Ph. B., Editor for New Brunswick.

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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

WE have received sufficient copies of REVIEW asked for in our last issue. We can now supply a few complete sets of Vol. I. Price, one dollar. Single numbers, ten cents.

WE publish in another column the interesting programme of the New Brunswick Educational Institute, to be held in Fredericton the last week in June.

THE next issue of the REVIEW, which brings to a close the second volume, will be issued about the 25th of April. We direct the attention of our subscribers to the special notice in another column.

THE Pictou *News* has an article from James Mackinley, Esq., honorary President of the Pictou Academy Ornithological Club, in favor of the now much maligned English sparrow. The expediency of its extermination is yet a moot question in Nova Scotia.

THE REVIEW and *Forum* together for $5.00. See advertisement in another column.

MISS MARY A. HAMILTON, one of our most successful teachers, and late assistant of Miss Woodcock, in the Provincial kindergarten school at Truro, has been appointed to the new public school kindergarten of Dartmouth. The best manner of affiliating the kindergarten system to our public schools has yet to be worked out. The Dartmouth school commissioners have secured one who can give their particular plan the most successful trial possible. We shall be interested in observing the results.

HERR L. BOBER, Professor of the German language in the Berlitz Schools, St. John, will shortly visit Halifax and Truro, to prepare the way for the introduction of the system there. Herr Bober has been most successful in St. John and Fredericton in arousing an interest and enthusiasm in the study of his native language. With pleasing manners and fine scholarly attainments he combines a genius for imparting instruction. Several of his pupils in St. John and Fredericton have acquired such a mastery of the language in less than a year as to be able to write and speak with considerable fluency.

AT the end of this month, in Nova Scotia, probably over 650 teachers will exchange school sections, and 100 will leave the profession for the time being. Nearly 200 new teachers will ally themselves with the 650 migratory and 1400 stable, to carry on the education of the 87,000 preparing to take charge of the country a few years hence. We wish you all a very happy and useful summer term. Those who change, we hope, will not forget to intimate the fact, as directed at the head of our editorial column, without loss of time. Whoever may forsake you, or be forsaken, we hope it may not be the REVIEW. Those who remain, we hope, may more than ever be disposed to remain true to the grand ideal of earnestly helping each other to develop a nobler and more intelligent manhood in our own native heritage, while helping ourselves.

In previous numbers of the REVIEW we have given the names of Atlantic province men studying abroad. It must not be understood that in doing so we commend such a course in every case. Within the dominion are institutions in many respects guaranteeing higher scholarship and sounder training than many very popular ones in the "States." Especially distinguished exception must, however, be made in favor of the post graduate courses in the Johns Hopkins University. We find there this present year five graduates of the Toronto University, one of Trinity, one of Albert, and three of Dalhousie. The Atlantic provincials are:

1. D. A. Murray, B.A., Truro, N. S., formerly Munro Mathematical Tutor in Dalhousie.
2. James S. Trueman, B.A., St. John, N. B., formerly Classical Tutor in Dalhousie.
3. Wm. R. Fraser, B.A., Pictou, N. S., formerly Classical Master in Pictou Academy.

Murray, who is a *Scholar*, is making a specialty of mathematics. Trueman, who is a *Fellow*, is studying Greek and Sanscrit. Fraser is specially devoting himself to Greek.

LAST month Miss Woodcock of the Provincial kindergarten at Truro addressed a meeting in New Glasgow called for the purpose of considering the formation of a school in that town. Considerable funds have already been raised for the purpose.

In Pictou the school commissioners have offered a school-room and janitorial attendance free for a kindergarten in the town.

IN the list of students from the Atlantic Provinces at McGill University, published in the March REVIEW, the names of A. W. Strong and J. P. Tuplin should be credited to Summerside and New Annand, P. E. I., respectively, instead of Halifax and Pictou.

THE St. John *Sun* issued on Wednesday last a twenty-four page paper with excellent illustrations and descriptions of St. John—its commercial history, its industries, etc. It is a cyclopædia of information on the business development of the metropolis of New Brunswick, and is invaluable for study and preservation.

WE feel sure that our readers will unite with us in wishing that the gentleman who has contributed the article on "Numbers," in another column, will again favor the REVIEW with others on the same subject.

WE have received Professor W. J. Alexander's recently published work on the "Introduction to the Poetry of Robert Browning," by Ginn & Co., Boston. A review of the work will appear in our next.

WE have received the report of the above institution, situated in Halifax. Its principal, J. Scott Hutton, M. A., has more than an American fame as one of the most successful educators in this department of education. He is assisted by a staff of eight instructors. The attendance during the year was *seventy-two*, viz.: forty-one boys and thirty-one girls. The report is replete with information interesting to all. The picture of this happy, transient home for the sons and daughters of silence, where all their faculties are expanded by an education which places them in better touch with the world than many of their speech-gifted brethren, is most delightful to contemplate. By an Act of the Nova Scotia Legislature, Nova Scotian deaf mutes are admitted free. Those from New Brunswick, Prince Edward Island, and Newfoundland, are admitted on favorable terms. An institution of the character of the one presided over by Mr. Hutton, is justly a source of honest pride to the province of Nova Scotia. Newfoundland sends eight, New Brunswick six, and Prince Edward Island seven, of the seventy-two above referred to.

WE have received from Geo. S. Milligan, Esq., LL.D., of Newfoundland, the report of the schools of that Island, under his supervision. He reports better educational results than have been attained in former years; an increase of capable teachers, more systematic courses of study, and consequently, more effective teaching. One hundred and twenty-five teachers were employed for the year ending December 31st, 1888, an increase of eleven. To these was paid in salaries, the aggregate of $20,119.63, a much larger sum than has ever been paid for that object. The aggregate attendance at school and college (*i. e.*, under Methodist Boards, etc.), was 1,387,382, with a percentage of attendance of 69.57. This is certainly a creditable average. Commenting upon it, Dr. Milligan states, that without the advantages resulting from the better school systems of the sister provinces, they are able to show a higher average attendance.

The report, throughout, shows that educational work is being stimulated and encouraged by improved methods, better appliances, and an increasing public interest. Dr. Milligan, alluding to the advantages resulting from teachers' conventions elsewhere, asks, "whether, on a *non-denominational* basis, an association might not be formed that would prove of immense advantage to all teachers in the colony, and to public education"? It is certainly worth the experiment.

WHAT SHALL WE STUDY?

In determining the scope of the studies to be pursued in the schools which are intermediate between the elementary school and the university, we must be guided by the same general principle on which we based our statement of the subjects which ought to engage the attention of pupils in schools of the elementary grade. The education must, in a large degree, depend upon the prospective avocations of the scholars. In our former paper we expressed our conviction that true education consists in a just and thorough recognition of the fact that training is of more importance than the bare acquisition of knowledge, and of the consequent necessity of so directing the work of the school that the pupils shall leave it with a fair degree of intelligence, and have implanted in their breasts the elementary principles of morality. The farmers and mechanics who in this way are prepared for the duties of life, will not only approve themselves good and skilful workmen, but acquit themselves as citizens with integrity and enlightenment.

In the intermediate schools are found some who, while purposing to return to the farm or learn a trade, are anxious to obtain as good an education as is within their reach, but by far the larger number of the scholars intend to become teachers, doctors, clergymen, lawyers or merchants. To the majority the high school or the academy marks the close of their scholastic life. There their assisted studies end, and thence they proceed forth into the world with such equipment as has been provided for them, in the knowledge which they have acquired, the habits of thought in which they have been disciplined, their desire to augment their scientific or literary stores stimulated, and, in some degree at any rate, their ambition directed to worthy aims. The remainder complete their literary studies at the university, preparatory to entering upon their professional preparation for the career of their choice.

To provide an education which shall be suitable to persons intending to follow these different pursuits is not so difficult as it at first sight appears. All ought to be affected in much the same way by the education they receive. It should make them capable and cultured human beings. Whatever talents a youth possesses, it is the province and duty of education to evoke them, and once made conscious of his natural endowments and proclivities, it becomes the anxious care of the teacher to lead him to such sources of knowledge, and employ such instruments of culture, as shall develop to the fullest extent those faculties and tastes.

The studies in the intermediate schools ought to be threefold—literary, scientific, and commercial. Under the first are classed the study of languages, literature, and history; the second comprises pure and applied mathematics, chemistry, physics, astronomy, and natural history; while under the third are embraced such subjects as are specially requisite for commercial pursuits—short-hand, book-keeping, etc., and, we may add, music and drawing, which will, undoubtedly, not only prove highly advantageous for those who have a special talent for them, but greatly beneficial in many ways to all, by cultivating the ear, the eye, and the hand.

There can be no question that the most important of all the literary studies to which students at this period can be directed is that of their own language. The more irksome, and therefore the least interesting stage of the study has passed. Here selected classics are with great advantage read and studied. The mind of the student can now grasp the meaning of a passage, analyze the thought therein expressed, and even thus early the promising pupil can be led to observe characteristics of style which may influence the formation of his own. By paraphrase and original composition he should acquire a facility in expressing his thoughts in language with whose meaning he is familiar, and in a form, clear, concise and coherent. And he may be made conversant with the English language at various periods in its history, by listening and reading carefully chosen passages from the writings of the authors which afford the best illustration of the condition of the language at the time the works were produced. The stimulating power of such a course of study as this cannot be overestimated, provided the teacher is gifted with a clear understanding and an enthusiastic appreciation of the literature which he opens up to the student. Unless the teacher himself is in sympathy with the author, he will in vain seek to produce an enduring impression upon his class, and few, if any, will feel irresistibly impelled to read for themselves. And this last is one of the most valuable results of literary teaching.

There is not the same unanimity respecting the study of Latin and Greek. The time was, and that not very long ago, when, in England, and nearly to the same extent in Scotland, these were almost the only subjects studied in grammar schools and academies. A change, however, has been effected, and the work has been modified so that it, to some extent, responds to modern demands. The usual result followed the agitation against exclusive classical teaching in the high schools of the country. To carry their object, the opponents of the traditional system had exaggerated its evils to such a degree that the most unreasonable demands came to be made for the entire excision of classical studies from the high school curriculum. Such a consummation had not been anticipated by the earlier and more cultured advocates of modern ideas in education, and certainly was not desired by them. Latin and Greek, therefore, still remain in these schools most important branches of study, and, alongside of them, mathematics, physical science, and English.

On this side of the Atlantic, classical study has been prosecuted with some success, but it has never occupied the peculiar position which was accorded to it in England. Yet this has not protected it from the onslaught of the educational reformer, who would erase it from the curriculum as absolutely worthless, and insert in its place modern languages or science. "Dead languages!" "smattering of Latin and Greek!" are expressions which are bandied about, and caught up by every illiterate who wishes to record his opinion respecting that of which he is entirely ignorant. Professor Max Muller said the other day: "We are told that we teach dead languages, dead literatures, dead philosophy, as if there could be such a thing as a dead language, a dead literature, a dead philosophy! Was Greek a dead language? It lived, not only in the spoken Greek—it was like fire through the veins of all European speech. Was Homer, was Æschylus, was Sophocles a dead poet? They lived in Milton, Racine, Goethe, and I defy any one to understand and enjoy even such living poets as Tennyson and Browning, without having breathed at school, or at the universities, the language and thought of these ancient classics. Is Plato a dead philosopher? It is impossible for two or three philosophers to gather together without Plato being in the midst of them. I say, on the contrary, that all living languages, all living literature, all living philosophy, would be dead if one cut the historical fibres by which they cling to their ancient soil."

"A smattering of Latin and Greek!" One would imagine from the satisfaction with which it is uttered that there could not be "a smattering of French," or "a smattering of science." From what we know of the teaching of these subjects, we would be inclined to prefer as an acquisition, the smattering of Latin and Greek to either of the others. But really, it depends upon how the subject is taught. Elementary science, intelligently taught, is a valuable possession to the youth, and so is the Latin grammar. We have already expressed our opinion of the great assistance which it renders to the pupil in the comprehension of grammatical principles, and we maintain that it is of still greater service to him as he advances in his studies. We do not accept the word "smattering" as an adequate expression of what we wish to convey by the Latin and Greek, or Latin alone, which ought to be acquired by students before entering the university. Such a superficial acquaintance with these languages is neither satisfactory as a basis upon which to rest future attainments, nor does it afford the intellectual exercise which is the most valuable of all the benefits to be derived from linguistic study. Surely to be trained to habits of accuracy, observation, and induction, is not one of the least profitable of the results of the occupations of school life. But this is only accomplished by painstaking and thorough teaching, and diligent and intelligent study. Then, and only then, when Latin and Greek are taught as they ought to be, when the thinking powers are called into exercise as well as the memory, and when the knowledge gained by the study of these languages is made available to assist the pupils in understanding their own language, shall the reproach be removed from the teaching of Latin and Greek.

(To be continued.)

N. S. Summer School of Science.

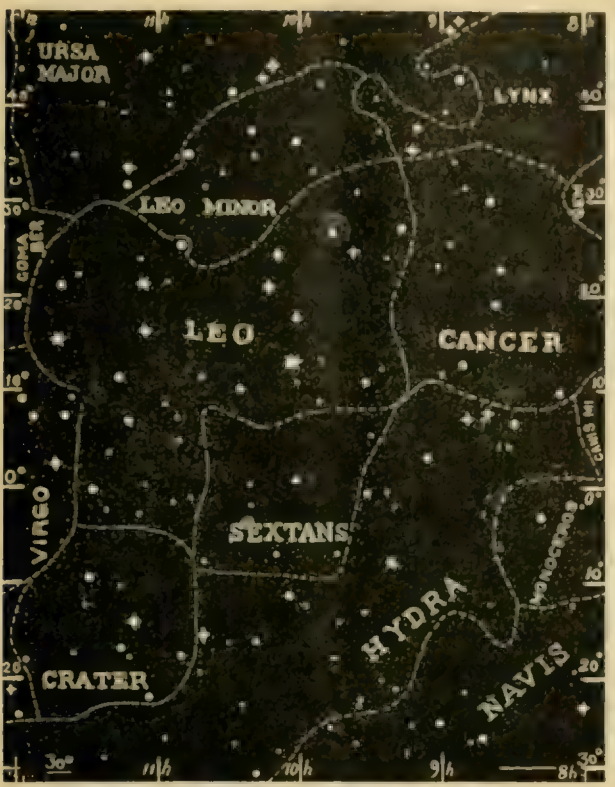
At a meeting of the directors, held in Pictou, it was decided to add elocution to the course of study. Prof. J. Burwash, D. Sc., Mt. Allison College, will be the instructor in that subject. Further arrangements have been made, by which the school will have the benefit of a course of public lectures during the next session. These lectures are designed to present scientific subjects in a popular manner and give completeness and finish to the work of the school.

The lecturers for 1889 are as follows:

David Allison, Esq., LL. D., *Superintendent of Education.*
A. W. Sawyer, LL. D., *Acadia College.*
N. McNeil, D. D., *St. Francis Xavier's College.*
Charles McDonald, M. A., *Dalhousie College.*
J. Burwash, D. Sc., *Mt. Allison College.*

The third session of the school will take place at Parrsboro, commencing July 22nd, 1889.

Elaborate preparations will be made for the entertainment of teachers and others who may avail themselves of the privilege of visiting this town at the meeting of the school of science. We fully expect to outdo Wolfville, not only in natural attractions, but in hospitality, interest and good will. Nature has been lavish of her gifts, and there is no branch of natural history which may not be studied to advantage here. It is to be hoped the school may become a permanence in Parrsboro, in which case a suitable building would be provided with lecture rooms, etc., and soon a museum could be started.—*Pars. Cor. Hx. Chronicle.*



FLEWWELLING.ENG. STJ.

AMONG THE CONSTELLATIONS.

No. XII. Leo and its Neighbors.

The hosts of stars, that in the spangled skies
Take their bright stations and to mortals bring
Winter and summer; radiant rulers, when
They set; or rising, glitter through the night.
Æschylus.—*Agam.* I.

In the early evenings of April Leo will be in the south, and our map will represent a broad strip of the sky, from 15° above the horizon, from which Hydra rises, to the paws of Ursa Major, in the zenith. Our readers will remember that the projection of our map widens the distance comparatively between the stars, in its upper part They will also notice that we mark all the stars of the first *five* magnitudes—the first magnitude, eight-rayed; second magnitude, six-rayed; third magnitude, four-rayed; fourth magnitude, the larger round points; fifth magnitude, the smaller points. This leaves only the sixth magnitude stars, the smallest generally visible, unmapped. In moonlight, the sixth magnitude, and, near the moon, even fifth magnitude stars, become invisible.

The Sun's Track.

The equinoctial line is always that marked 0° on the sides of the map. The ecliptic passes diagonally from Gemini through Cancer, just below Regulus (the first magnitude star in Leo-Alpha), and cuts the line 12h. right ascension, and the equinoctial in the same point in Virgo. The ecliptic is the sun's annual track. The sun is on the boundary of Gemini and Cancer about the 20th of July. On the 21st of August it is exactly about half a degree below Regulus—only its own breadth. And on the 22nd of September it is at the autumnal equinox, where 12h. right ascension cuts the equinoctial.

Leo.

The *Sickle* stands vertically on its handle, facing Cancer. Alpha (Regulus), of the first magnitude, forms the end of the handle; Eta, of the second magnitude, directly above it, marks where the handle joins the curved blade, which is outlined in order by Gamma, of the second magnitude, Zeta, of the third, Mu, of the fourth, at the highest part of the curve, and Epsilon, of the third magnitude, at the point. The sun, curiously enough, comes directly to the end of the handle on the 21st of August. It is reaping time with us in the northern hemisphere when the sun takes the Sickle in Leo by the handle.

The *trapezium* is a configuration of four stars in the eastern half of Leo. The lower one, of the second magnitude, is Beta (also called *Denebola*), near the lion's tail; the fourth magnitude, above it, is "93 Leonis"; the second magnitude star, in the upper angle, next the sickle, is Delta; and the third magnitude, below it, Theta. There are two nebulæ in a southeast line from and close to this star. The sickle is in the lion's breast, the curved blade rising into the head.

Cancer.

The *bow* in Cancer is outlined by its four largest stars, all only of the fourth magnitude. It is concave towards Leo. Their names, beginning with the upper, are, Iota, Gamma, Delta, and Alpha. Gamma and Delta are near each other, and nearly midway between them, in the centre of the *bow*, is a remarkable cluster of small stars, visible to the naked eye as a large nebula.

This is "Praesepe," or the beehive, in Cancer. It has often been taken for a nebulous comet, by persons not accustomed to observe the skies. An ordinary field glass or telescope will show it to be a cluster of stars. Galileo, after his invention of the telescope, counted thirty-six stars in it. At the Washington observatory over one hundred and fifty stars, between the sixth and eleventh, have not only been seen, but have had their positions measured and catalogued, in this faint patch of light to the naked eye.

Leo Minor and its Neighbors.

This constellation, just above Leo Major, is outlined by its three fourth magnitude stars, which, reading from left to right, are, 46 Beta, and 21 of Leo Minor. Right above this arch is the couple of third magnitudes in Ursa Major's paw, Lambda and Mu, reading from above downward. Near Leo Minor's tail is the couple of a third and fourth magnitude stars in the other hind paw of Ursa, Nu and Xi. While right above the tail of Lynx is the third couple of third magnitude stars, Iota and Kappa, in one of Ursa's fore-paws.

Sextans

has only one fourth magnitude, and six fifth magnitude stars.

Crater,

the cup, has one third magnitude (Delta), four fourth magnitudes, reading downward and to the right, Theta, Gamma, Beta, and Alpha. This latter is called *Alkes*, and is remarkable on account of its *red* color. Near by, across the boundary, is Nu, of Hydra. Beginning at the top, these stars make the outline of a cup or dipper, Theta and Delta forming the handle.

Hydra,

the water serpent, is one of the longest constellations, stretching for more than one hundred degrees from west to east, Its principal star, Alpha (called also Alphard), is of the second magnitude, and down in its body. It is, therefore, also called *cor hydræ*, the heart of the water serpent. Zeta and Epsilon are the two third magnitude stars in its upraised, crested head.

Astronomical Notes for April.

Mercury is near the sun, in *superior* conjunction, on the twenty-fifth, from which time it becomes an evening star.

Venus, which, as a brilliant evening star, was moving eastward towards Taurus last month, becomes stationary during the second week of April, about five moon-breadths north of Epsilon Arietis, a double star of the fourth and sixth magnitudes. It then proceeds westward to meet the sun and is more and more robbed of its glory by the growing twilight until on the last day of April at 11 P. M., 60th meridian time, it passes the sun to the west about seven or eight sun diameters to the north of him, and a few days after it will make its appearance with growing brilliancy as a morning star. As Venus is then nearly directly between us and the sun this its called its *inferior* conjunction. It takes place not far from the centre of the constellation Aries.

Mars will be evening star in Aries, passing Venus in the third week of the month some distance to the south, and at the end of the month will be entering Taurus.

Jupiter is morning star, nearly stationary the whole month in Sagittarius, moving eastward during the whole month only about one moon-breadth. It is low down in the southern horizon and will be on the meridian about 4 A. M.

Saturn will be actually stationary about the middle of the month in Cancer opposite the Sickle in Leo, near where the line 9h right ascension is intersected by 18° north declination in our star map. Gamma and Delta Cancri are its nearest neighbors to the west, a little higher up than the planet. These are the pair of fourth magnitude stars in the centre of Cancer in our map, Delta being the lower one. Just west of these and nearly between them is a very interesting cluster of stars called the "Praesepe" which looks like a faint nebulous comet.

In fact it has often been mistaken for a comet. Within the last year or two, a writer in one of our daily metropolitan papers announced this discovery. There was a bright planet in the neighborhood as at present. First, he saw the nebulous patch of light distinctly, night after night. Second, he noticed that it was changing its distance from a bright star. (?) It must, therefore, be a comet, and accordingly the announcement was made. But, first, it was the bright star (planet) which was changing its position while the little cloud of light was fixed. Second, a mariner's telescope or a good field glass would have shown over thirty small stars in this cloud, and a more powerful glass would show over 150.

Uranus, on the 9th, may be readily found two degrees north of Spica Virginis, as a star of the sixth magnitude. A small telescope will transform it into a small sphere of a delicate green tint.

Inspector's Notice.

To the Teachers of District No. 10 :

I have to compliment you on the success of our Nature Lessons for the winter term. Your intelligence and zeal in placing them before your pupils went far beyond my expectations. Never before, to my knowledge, has the science work of our schools been so systematically and successfully performed. Of 230 teachers, about 10 only have neglected this work. For the remaining few weeks I would advise a general review of the subject, applying the lessons as closely as possible in the direction of cleanliness, effect of impure air and water, and their purification, good and bad diet, some advice about clothing and exercise, etc. Our science work for the summer will be, principally, botany. I hope to send you an outline of that work early in May. I can promise, also, that the REVIEW will lend you a helping hand in the study and teaching of this delightful subject.

Very truly your friend.

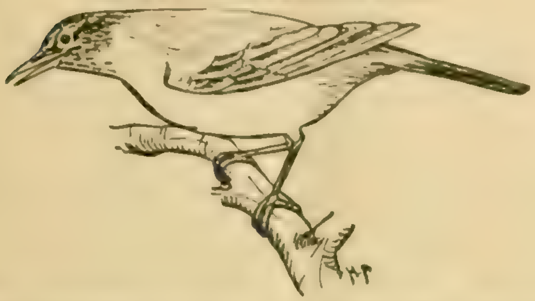
E. J. LAY.

Amherst, April 1st, 1889.

P. S.—School returns were forwarded to Trustees last fall, enclosed in registers.

FERNDALE SCHOOL.

No. XXI. The American Robin.



Merula Migratorius, Linn. (761 A. O. U.)—Natural length, about *ten* in.

The Robin, the forerunner of the Spring.
Longfellow.—*Lady Wentworth*, line 113.

T. Here we have a mounted specimen of our Canadian robin. They had nearly all gone south to spend their winter, and in this month of April we shall see them returning. Look carefully at its bill, its feet, its wing feathers, and its color.

Next let us hear what Tennyson says of the robin, and tell me what you think of it:

In the Spring a fuller *crimson* comes upon the robin's breast.

Chorus of S. *Our* robin has no *crimson* on its breast.

T. Here is a verse from Wordsworth:

"Art thou the bird whom man loves best,
The *pious* bird with the *scarlet* breast—
Our *little* English robin;
The bird that comes about our doors
When Autumn winds are sobbing."

Chorus. *Our* robin's breast is not *scarlet.*

S. Why does Wordsworth call the English robin "the *pious* bird"?

T. Delie W. Norton, in a poem to the Robin Redbreast, says:

"On fair Britannia's isle, bright bird,
A legend strange is told of thee——"

S. What is the legend?

T. Hoskyns-Abrahall, in "English Lyrics," gives it briefly, thus:

"Bearing His cross, while Christ passed forth, forlorn,
His God-like forehead by the mock crown torn,
A little bird took from that crown one thorn.
To soothe the dear Redeemer's throbbing head
That bird did what she could; His blood, 'tis said,
Down dropping, dyed her tender bosom red.
Since then no wanton boy disturbs her nest;
Weasel nor wild-cat will her young molest;
All sacred deem the bird of ruddy breast."

S. Is the story true?

T. Oh, you should know that much. It is a pretty, poetic picture, suggested by the blood-red breast of the little bird.

S. But our robin's breast is not blood-red.

Another S. Nor is it a very *little* bird. Ten inches long is a pretty fair size for a bird.

T. You are right. Our robin is altogether different from the robin of the songs and stories of England. The color of the breast of our robin is——

S. Chestnut, or reddish orange.

T. Correct. And it was called the robin by the first settlers, because it had a reddish breast and frequents the neighborhood of man, and migrates to the south in winter, returning in spring, something like the robin in their home country. It belongs to the *thrush* family of the song perchers, however, and its scientific name means "the migratory thrush."

S. But it is different from the English robin?

T. Very. The English robin belongs to the *warbler* family of the song perchers, and is something of the size and shape of our warblers, which are so abundant in May. Its breast is of a much brighter and purer red than that of our robin, also.

S. Are there many different kinds of birds of the thrush family in the province?

T. Five or six, perhaps. Wilson's thrush, Olive-backed thrush, and the bluebird, belong to the family.

S. How can we know a thrush from other birds?

T. Count the number of quill feathers on the last great joint of the wing—the *primaries*, as they are called.

S. There are *ten*; but the first is very short.

T. Correct. Examine the *tarsus*—the bare part of the leg.

S. It is covered with *one* continuous plate, like a boot, instead of several small plates or scales.

T. Yes. That is what is called a "booted tarsus." Which is longer, the tarsus or middle toe?

S. They are very nearly the same in length; at least, the tarsus is not much longer.

T. How is the bill?

S. Not stout like the Grosbeak's; rather slender, with the slightest curve, and a small notch near the tip of the upper.

T. Very good. Have you ever noticed what they feed upon?

S. Berries, worms, caterpillars and other insects.

T. They are useful, therefore, you see, and we should encourage their multiplication.

S. When feeding, or hopping on the ground, it repeats quite friskily, *pwee-sht, pwee-sht, pemp-pemp.*

T. What is its nest made of?

S. Of fine twigs, covered inside with mud, then lined with very fine grass fibres. They are often saddled on the branches of trees.

T. And you have seen their eggs?

S. Yes. Generally about five, of a beautiful sea-green, a little longer than an inch the longest way.

T. Are the young birds colored like the old birds?

S. No. There is not so much reddish, and there is more black and white speckling.

T. Is it good fun to get a robin's nest and to take away the eggs or the little chickens?

CHORUS. No. It would be cruel.

JIMMIE. How would a boy like a great eagle to come and carry off his little brother or sister?

T. Have you seen any ladies with *wings* of birds on their hats? How did they get them?

S. They must have paid some one for killing the birds; but I don't think they ever thought of it.

T. But hundreds of thousands of our rarest, prettiest and most useful song birds are being yearly killed—and some kinds are nearly exterminated already by the demands of some women; and all the scientific people, and all you, I hope, are trying to stop the slaughter.

JACK. I just saw a woman on the street who seemed to be as proud of the bird's wing on her hat as a red Indian of the olden time with a white man's scalp on his belt.

JIMMIE. It would serve her right if a big, ugly eagle came down and pulled off her natural wig to fix up the nest for the little eagles.

[The cuts of birds used in this and the March number of the REVIEW were made from drawings of specimens in the Provincial Museum, Halifax, N. S.]

ACCORDING to Mr. A. R. Wallace, birds' nests may be divided into two classes: those which are exposed or imperfectly concealed, and those which are covered or so placed that the sitting bird is effectually hidden. With but few exceptions, Mr. Wallace finds that birds of conspicuous color build concealed nests, while in species where the female is dull the nest is fully exposed.

Home Thoughts From Abroad.

Oh, to be in England, now that April 's there,
And whoever wakes in England sees, some morning, unaware,
That the lowest boughs and the brushwood sheaf
Round the elm tree bole are in tiny leaf,
While the chaffinch sings on the orchard bough
In England—now!
And after April, when May follows,
And the white-throat builds, and all the swallows!
Hark, where my blossomed pear-tree in the hedge
Leans to the field, and scatters on the clover
Blossoms and dewdrops—at the bent spray's edge—
That's the wise thrush: he sings each song twice over
Lest you should think he never could recapture
The first fine careless rapture!
And though the fields look rough with hoary dew
And will be gay when noontide wakes anew
The buttercups, the little children's dower—
Far brighter than this gaudy melon-flower.

—ROBERT BROWNING.

Plants in their Homes and in the School-Room.

No. III. Diœcious and Monœcious Plants.

How strange are some of the habits and ways of living of our brother organisms, the plants! They go to sleep and awake; some close up their leaves or flowers at the approach of rain; some are addicted to animal food; some love to frequent the abodes of man; others love solitude. Some would seem to be unsocial in their habits. Such are *Diœcious* plants. The word means in *two households*. Others prefer the same home. These are the *Monœcious* plants. They live more on the communistic plan—in *one household.*

Examine the alder tree which is just now in flower, its catkins drooping gracefully from the summits of the branches. Pick off a branch, examine one of these closely. On the same branch, just underneath the catkins, you will find small reddish flowers, usually in clusters of three. These flowers have no blossoms. Take one of the drooping catkins; by the aid of a knife and a small magnifying glass you wil be able to see that it is composed of a great number of *stamens*, but with no conspicuous calyx, and no corolla or pistil. These are the *staminate flowers.* Next look at the inconspicuous reddish flowers. Detach one from a cluster, examine it with a glass. It is quite different from the stamens in the large catkins. These are the *pistillate flowers.* They are not very beautiful, but they are hardy. They have braved the storms and cold of winter without any covering.

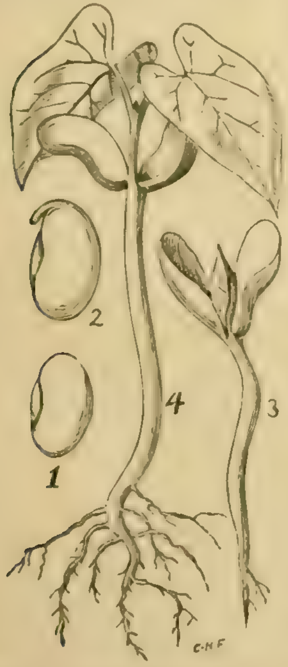
Let us examine another early flowering plant—a willow. Its flowers were comfortably tucked up during winter. Now the soft downy catkins emerge from the bud and the "pussy" willows are out.

If you have put some branches in water, as directed in the last REVIEW, they will be ready to study now. Pick off a catkin, notice that the silky down appears from a little reddish bract. With a knife carefully separate one from the catkin; propped up against this bract is a little flower, with no calyx or corolla. It may be a conical shaped body, with two divergent lobes at the top. If this is the case it is a pistil, and all the flowers on that catkin and all other catkins from the same tree will be pistillate. Examine the catkins of other willow trees in the neighborhood. Alongside of the downy bracts you may discover another kind of flower, each consisting of *two* stamens. These are the *staminate* flowers and they grow on a separate tree from the pistillate flowers.

Notice the way the buds are disposed on the willow branch, and read the chapter on Phyllotaxy in Gray's "How Plants Grow," also on "Staminate and Pistillate Flowers." A number of other trees and shrubs have these kinds of flowers which come out early in spring. Get the pupils to search for them and bring them into the class-room.

Part IV. Two Great Divisions of Flowering Plants.

The seeds that were started a month ago, and those that have been planted at intervals since will now be ready for study. If your pupils have planted these and cared for them as directed in the last REVIEW, they have begun their work in plant study in the right way, and they will have an interest in the succeeding lessons that no mere study of a text-book could give.



Take the bean plants for the first lesson, and have, if possible, some in the pod, as well as two or three that have been placed in warm water a day or two before. Drawings should be made of the different stages of growth, as represented in the annexed diagram. The cotyledons or seed-leaves, and their uses should be carefully explained and the pupils asked to write about them. It will take much ingenuity and some little time before they will understand the difference of structure and shape and the uses of the pairs of leaves that appear on No. 4 of the drawing. These, with other features were so fully explained in the April issue of the REVIEW, of last year, that we shall refer our readers to them.

The teacher, after two or more lessons on the bean plant, may tabulate the following characteristics:

(1) It has two seed leaves.

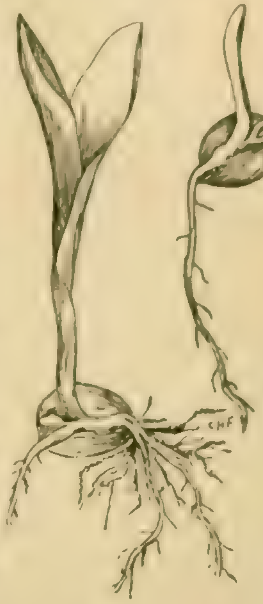
(2) It has netted-veined leaves, irregular in outline.

These characteristics, with the two following, which may be observed in other plants as the season advances, determine a great class of flowering plants—the DICOTYLEDONS.

(3) These have exogenous stems (outside growing) with usually separate bark.

(4) They have the flower usually on the plan of five, sometimes four, and less frequently three.

Let us take next the seed of corn that has been planted. Unlike the seed of the bean it does not split open on being soaked in water. The seed remains in one piece. After soaking it in water for several days (longer than the bean), remove the seed covering. Growing from one side of the seed will be seen rudimentary leaves neatly folded round a short axis—the caulicle (from the leafy end grows the plumule or ascending axis). Growing from the other end of this caulicle, after it has broken through its sheath, is the descending axis or root. What nourishes the young plant in the early stages of its growth? Where is the food laid up?



Looking at the larger plant of several weeks' growth, we find the leaves have unfolded, the roots have grown longer, and sent rootlets in different directions. How does the young plant now derive its nourishment? The leaves will now show distinctly the parallel veining. After drawings have been made, and all the parts of the young plant carefully studied, the following facts should be written out as the basis of future study of a second great class of flowering plants:

MONOCOTYLEDONOUS plants, such as Indian corn, oats, grasses, etc., have:

(1) One seed-leaf to the embryo; (this seed-leaf is not easily found, but in Indian corn it may be detected after long soaking, closely surrounding the caulicle, and furnishing it with the food stored up in the kernel).

(2) Have (usually) parallel-veined leaves, sheathing the stem.

(3) Have the parts of the flower in threes, sometimes fours, but never fives.

(4) Have endogenous (or inside growing) stems with inseparable bark.

To the Botanical Club.

. . . . The sylvan powers
Obey our summons; from their deepest dells
The Dryads come, and throw their garlands wild
And odorous branches at our feet; the Nymphs,
That press with nimble step the mountain thyme
And purple heath-flower come, not empty handed,
But scatter round ten thousand forms minute
Of velvet moss or lichen, torn from rock
Or rifted oak or cavern deep; the Naiads too
Quit their loved native stream, from whose smooth face
They crop the lily, and each sedge and rush
That drinks the rippling tide; the frozen poles,
Where peril waits the bold adventurer's tread,
The burning sands of Borneo and Cayenne,
All, all to us unlock their secret stores
And pay their cheerful tribute.

J. NAYLOR, *Norwich, 1818.*

For the Review.]

New School Building at Springhill.

The new school building at Springhill, Cumberland County, Nova Scotia, was completed on February 20th, 1889. Springhill now boasts of having one of the best school-houses in the province. It is an educational pile, as the Springhill *News* puts it, costing $10,000. It is seventy-two feet square and occupies a prominent height overlooking the town—facing the west, and is enclosed by a picket fence. Inside the building there are eight rooms—four on the ground floor and four upstairs. These rooms are 33x28 and each will accommodate upwards of seventy pupils.

Eight teachers and over five hundred pupils occupied this building for the first time on Thursday, February 21st. The formal opening took place on the afternoon of the following Tuesday, February 26th. A large number of parents and visitors availed themselves of the opportunity given to see the new building, and the teachers and pupils engaged in their work.

The principal of this school is D. W. Byers, a first class graduate of the provincial normal school. The other teachers are: J. A. Purdy, Miss Maggie A. Grant, Miss Cassie M. Bacon, Miss Jennie Peers, Miss Ella Fletcher, Miss Clarissa P. Hunter and Mrs. Logan.

The teachers highly appreciate their new quarters and have entered upon their work with renewed efforts. The scholars, too, with their youthful countenances beaming with delight, seem to find the change agreeable.

The old building, though forsaken, is not yet forgotten. Although *Ichabod* adorns its walls there are some who will cherish its memory for many years to come.

For the Review.]

On First Lessons in Number.

A Normal School Exercise.

What is number? Apart from all consideration of size, shape, color or material of the individuals which compose it, every group of objects has a special character which we designate *number*. Number is, therefore, a sort of quality or property which we find in every group of objects. This may not be an adequate definition, but, at least, one side of the truth is expressed.

How then should ideas of number be taught? In much the same way as ideas of other properties and qualities are taught. To get ideas of color children must see, handle and compare colored objects. So, too, *number ideas* can only be obtained from objects properly presented in groups. It is no more absurd to attempt to teach red than 5 without objects.

Where should one begin in teaching number to children five years old? As in all other subjects, just where the child's knowledge ceases to be definite and complete. This will, of course, differ very much with different children. Many on entering school do not know number beyond 3, while others can count, at least, as high as 10.

Is ability to count numbers, say, up to 10, a guarantee of adequate knowledge of those numbers? By no means. Counting implies at least only a knowledge of the *order* in which numbers occur. 6 is known, for example, only by the fact that it comes next after 5. Thus, in learning to count, only a single fact is learned about each number—that it is 1 more than the number just before it. Counting is liable to be little more than a succession of names to be given one after another to the objects in a group. It is a very great mistake, therefore, to spend time teaching children to count up to high numbers until they have thoroughly learned the lower ones.

What then is it, to know a number as it should be known? A number is fully known only if it can be identified by any one of the facts which may be learned concerning it, and if, when once so identified, all the other facts can be stated.

What are these facts? Illustrate by the numbers 5 and 9. The number 5 is made up of 4 and 1, of 2 and 3, of two 2's and 1; while the number 9 should be known as made up of 5 and 4, of 6 and 3, of 7 and 2, of 8 and 1, of two 4's and 1, of three 3's, of four 2's and 1.

Should *all* of the facts involved in any one number be learned before another is introduced? Certainly no attempt should be made to teach numbers beyond 10 until all the numbers up to, and including 10, are known in the complete way just indicated, for the reason that any real knowledge of numbers greater than 10 is impossible unless this foundation is laid. As to the numbers below ten, it is not, perhaps, absolutely necessary, though generally it will be the safer way, to follow the plan indicated in the question.

How may a new number be introduced, supposing all of the preceding numbers to be completely known? There are two ways: first, and probably this is the common method, by a process of *synthesis*, so called. If 5 is the number to be taught, the child already knows 4 as well as 1; a group of four objects is presented to him and recognized; another is then added to the group and he is taught to call the enlarged group 5. 5 is thereafter identified as 1 more than 4, just as 4 has been previously learned as 1 more than 3. This is evidently the process of learning to count. After this process of synthesis, by which the number 5 becomes known, there would follow in thorough teaching the process of *analysis*, by which the child learns that other component parts of 5 are 3 and 2, two 2's and 1.

What is the other method referred to? It is claimed by many that each number up to 10 should be taught as one would teach an apple or a cube, by presenting it as a whole, requiring the child to discover for himself *all* the facts involved in it. Thus, give him a group of 5 objects, tell him that there are 5, and then let him find out by analysis that it includes a 4 and a 1, a 2 and a 3, two 2's and a 1.

But is it possible to learn and afterwards to recognize "at sight" a number presented as a whole? Only by associating with each number a *special arrangement* of the objects in the group from which the number is taught. If the *linear* arrangement of objects is adopted for all numbers, as is the case when they are taught from the ball frame or strings of beads in the kindergarten material, 6 can hardly be distinguished as such, except by counting to see if it is 1 more than 5, or by separating it into the other groups of which it is composed.

What distinctive arrangements other than the linear are possible for each of the numbers up to 10? Arrangements somewhat similar to those found on dice or dominoes. Such arrangements receive the name of *number pictures.*

What special advantages would possibly be gained by teaching numbers in this way? Each number would have an individuality quite independent of the preceding numbers, and could, therefore, be presented as a whole and always recognized in that form at sight. A mental picture, vivid and definite, of each number would be in this way indelibly stamped upon the child's memory. The analysis of each number into its component parts would be greatly facilitated and the facts thus discovered more easily and more accurately remembered.

Would not the child thus taught get the impression that the form or the arrangement of the group was essential? Such an impression would not last long; the child's experience in manipulating his blocks, tablets, etc., would soon obliterate this. Besides, any possible disadvantage resulting therefrom on this score would be more than compensated for by the greater certainty and definiteness of his knowledge of the number and its relation.

What kinds of objects are best for teaching numbers? In teaching to count, and, indeed, for many purposes, the old fashioned ball frame is very useful. Strings of beads or buttons, quantities of pumpkin seeds, beans, little squares or discs of leather are at the command of every teacher. A simple board, eight or ten inches square, in which are bored little holes in rows, intersecting so as to make squares, say three-quarter inches each way, together with a quantity of shoe pegs form a useful and inexpensive apparatus. If common numbers are to be taught in the second of the two methods above outlined, the main reliance must be at the outset on the number pictures.

How can these number pictures be provided for school use? Charts such as Parker's or Dunton's can be purchased at some considerable expense; but every teacher has a blackboard and can make them for herself. Any simple mark may be adopted, such as dots, circles, crosses and the like. Cubes with the number pictures on them like dice, or tablets like dominoes would be useful for the children at their desks.

Explain somewhat more in detail the use of number pictures. Suppose the number under consideration is 5, teacher presents the picture of it, thus: ⁙ and calls 5; children make 5 on their slates, or find it on their dominoes or cubes, or make it with their pegs, beans or buttons.

When the number itself is thus known as a whole the analysis of it will proceed thus: Separate the group thus: ⁖ ∶ or ∶ ∶ ˙ that is, into 3 and 2; then thus: ∷ ·, 4 and 1; and lastly thus: ∶ ∶ · that is two 2's and 1. Children taught to state all the facts they have discovered.

What forms of expression are appropriate in the statement of these facts? The simplest and most natural possible. Especially should the technical term add, subtract, multiply and divide, together with their associates, be avoided. As in the rudiments of all subjects the difficulty of scientific terminology should be deferred till the elementary ideas have been completely appropriated.

What sorts of exercises for practice are desirable? The circumstances of the school and the teachers' own versatility must determine this point. However, besides the varieties already indicated, exercises in measuring lengths, in imaginary buying and selling, in combining and separating the children into groups, illustrating the numbers taught, will all prove interesting and profitable.

What about abstract numbers? The teacher need be at no pains to teach abstract numbers, *so called.* This will come of itself when the minds of the children are ready for it. All the children's thought and reasoning should, in this regard, be upon *objects*, first as actually present; afterwards as brought to the imagination of the child through little *stories* told by the teacher.

How much time should this work take? In the schools which have won recognition as representing the best methods, a year is not considered too long to lay well the foundation for intelligent, healthful, rational work in arithmetic, in the thorough knowledge of the first ten numbers. If it can be done in less time—by all means do it in less; if more is required give it.

When should figures be taught? In general, the longer they are deferred the better. It must not be forgotten that numbers are not figures, and that the object of the teacher should be to teach the former rather than the latter. Arithmetic practice is too often a mere juggling with figures, instead of reasoning about numbers. In most cases it will be safest, undoubtedly, to defer the teaching of figures until the first ten numbers are thoroughly learned.

Truro, N. S., March 9th, 1889

Music in the Schools of Nova Scotia.

Dr. Allison, in his last report, very truly says:

> The important subject of music cannot be said to be on a satisfactory footing in our schools, nor indeed to have ever been so. I am persuaded that the reported figures convey an exaggerated impression regarding the amount of attention which this branch really receives, while, of course they are even less reliable as indices of the nature and value of the instruction imparted. The matter has been pretty much left to take care of itself, and teachers and local authorities should not be held to account for the poverty of result accompanying this want of system. It is time that definite attention should be directed to this important instrumentality of culture, and it is proposed to have the whole subject carefully considered at the ensuing meeting of the Provincial Educational Association. Our schools should not be left without some tolerably specific instructions for their guidance.

With reference to the best system of musical notation, he speaks very plainly, and his authorities are very weighty:

> The claims of the Tonic-Sol-Fa system of reading music are deserving of careful consideration. This system essentially consists in the substitution for the ordinary staff notation, which is capable of being mastered only by comparatively mature minds, of a much simpler and radically different one, the principles of which are entirely within the grasp of children. It is now in universal use in the Public Board Schools of England, and, its advocates claim, with the most satisfactory results. These urge that it appeals more directly and forcibly to the general musical intelligence than the ordinary system, and is, in short, the truly logical and philosophical method of teaching singing. This is a large claim and, as might be expected, is not universally admitted. Such an induction of facts, however, as I have been able to make, leads me to believe that the system is especially adapted to elementary schools, as bringing a scientific knowledge of vocal music within the reach of children to whom this would be quite impossible by ordinary methods.

The coming common school teacher must be able to sing and to teach vocal music. In our best schools Boards of Trustees already insist on this qualification in addition to the provincial diploma.

Comparison of School Statistics.

NOVA SCOTIA AND NEW BRUNSWICK.

The following statistics, compiled from the recent reports of Superintendent Allison and Superintendent Crocket, may serve to show the status of common school education in Nova Scotia and New Brunswick for the past year. The Nova Scotia year ended 31st October, 1888; New Brunswick school year ended June 30th, 1888:

	N. S.	N. B.
Greatest number of schools in operation,	2166	1542
“ Teachers employed,	2222	1613
Number of different pupils registered for year, ...	105,231	69,063
Proportion of population at school during year, ...	1.41	1.46
Proportion of population at school during either term, ...	1 in 5.0	1 in 5.38
Percentage of pupils daily present, on an average, while schools were in session, ...	57.6	60.0
Percentage of pupils daily present, on average, for full term, ...	55.4	56.16
Average cost of educating each pupil,	$5.98	$5.88
Rate per pupil from government, ...	1.71	1.97
“ “ ratepayers, ...	4.75	3.91
Amount of government expenditure for County Academies (N. S.), and Grammar Schools (N. B.), ...	$13,306.67	$4,404.02

TEACHERS EMPLOYED.

Academic Grade A (N. S.), Grammar (N. B)., ...	38	14
First-Class (Male), ...	185	113
“ (Female), ...	140	135
Second-Class (Male), ...	222	181
“ (Female), ...	881	610
Third-Class (Male), ...	161	111
“ (Female), ...	533	415

AVERAGE SALARY OF TEACHERS.

First-Class (Male), ...	$439 74	$526 90
“ (Female), ...	298 11	328 49
Second-Class (Male), ...	253 93	303 66
“ (Female), ...	228 48	225 75
Third-Class (Male), ...	190 21	231 00
“ (Female), ...	161 17	187 47

ANNUAL EXPENDITURE FOR PUBLIC EDUCATION.

Provincial, ...	$180,811 48	$136,326 45
County Fund, ...	118,485 38	94,501 17
District assessment, ...	300,366 00	175,423 97
Total, ...	$599,662 86	$406,251 59

[This expenditure does not include cost of buildings, repairs, maintenance of Normal Schools, cost of inspection, etc.

The Nova Scotia School Curriculum.

David Allison, Esq., LL. D., Superintendent of Education for Nova Scotia, comments as follows on the practical results, so far, of the provincial course of study, in his annual report:

> The returns included in Table VI. indicate that the regulative influence of the prescribed course of study upon the methods, order, and subjects of instruction in the public schools, is year by year increasing. Certain studies are of a fundamental character; they constitute the true substance of all education. On the intellectual side, the utility of a common school is primarily to be measured by the efficiency with which these branches, sometimes called "instrumental," as furnishing the key to all advanced or special knowledge, are taught. From this point of view it is gratifying to learn on the testimony of our most observant and experienced educators, that these rudimentary subjects were never so well taught in so many schools as since other useful, though in a strictly educational sense, less essential branches, have been incorporated in the working scheme of studies.
>
> The influence of the course of study to which I have referred, is particularly noticeable in the considerable increases reported from year to year in the number of pupils receiving instruction outside of the purely instrumentary branches. A beginning, at least, has been made in teaching in an informal way the elements of science to the pupils of the ordinary grades. Natural science is now occupying a more and more important place in education, and the day predicted by a great writer, "when ignorance of its primary facts and laws will be regarded as a defect second only to ignorance of the primary laws of religion and morality," is probably not far off. If science then means a knowledge of nature, and if it is worth studying at all, it would be difficult to show good reason for excluding it from any scheme of elementary education. Definite instruction in a particular science, with its generalizations and use of technical terms, should not be demanded until the pupil's powers have been gradually unfolded and the way has been led up to it by a course of preliminary training carefully adapted to the end in view. This preliminary training, in the shape of simple object lessons, should begin with the opening of school life; and nothing seems better established than that in this informal untechnical way, the observing and inductive faculties may be beneficially trained, and a good and varied knowledge of important principles and phenomena acquired. In our own case the complete realization of such a system of instruction must be the work of time. Until recently, the training of most of our teachers was exclusively literary, their licenses having been obtained without the mastery of the simplest elements of a single science. This fact itself interposed a serious obstacle to the introduction of scientific teaching. Then many teachers, perhaps not unnaturally, failed to understand precisely what was expected, and augmented real difficulties by inventing imaginary ones. Still it is felt that in view of all the circumstances of the case, a satisfactory beginning has been made. With true professional spirit many teachers have made it a matter of pride and honor to obtain, by special effort, the necessary qualifications. The curriculum of the normal school and the syllabus of examination have been modified to promote this part of our school work, while outside of our regularly established educational agencies it is proper that I should acknowledge the special stimulus and aid which the movement has received from the Summer School of Science, elsewhere noted in this report, and from the EDUCATIONAL REVIEW, a periodical of a very high order, devoted to the interests of our maritime schools, and marked by the prominence given to science and to experimental methods of teaching its principles.

Superintendent's Report of Education in New Brunswick.

> There is a satisfactory degree of activity and progress in the several aspects of the service. A large number of new school-houses have been built, others substantially repaired, and many supplied with suitable furniture and needed appliances, while many school-grounds and premises have been made places of neatness, beauty and attractiveness. The inner work of the schools, as attested by the inspectors, has been carried on with undiminished efficiency.

This begins Superintendent Crocket's report; and it is encouraging to note the evidence of general progress.

Irregular attendance, and a consequent falling off in the daily average is a matter of regret. The Superintendent shows the loss to parents and pupils, and suggests that teachers use all their influence to secure greater regularity of attendance, especially by frequent visits to parents.

The revised course of study, to which an extended reference was made in the March REVIEW, is printed in the report, and separate copies have since been placed in the hands of the teachers of the province.

In regard to teachers' salaries, it is gratifying to note that the salaries of first-class teachers, both male and female, show a slight increase over the preceding year, and the Superintendent observes: "An efficient school service is not only the best protection to society but it is the cheapest, even at a cost much in excess of the present rates."

Secondary education is provided for by forty-four superior and fourteen grammar schools. The former are represented in an efficient condition, and have awakened in the districts in which they have been established a great educational interest and activity. Of the grammar schools the Superintendent says:

> These schools as constituted are teaching as much and as effectively as they can teach, but this falls short in both cases of what it ought to be. My view as to their inadequate

equipment and their failure to meet the wants of modern times were set forth in my last annual report, and need not be repeated here. I would, however, respectfully solicit the attention of the legislature to them, and again recommend that better provision be made for our secondary education.

Concerning a normal school curriculum, there is the following:

Whatever may be the true theory of normal school training we are not yet in a position to dispense with the teaching of academic subjects. Very few of our common schools or even high schools have the facilities for imparting such instruction, both as respects its amount and character, as teachers require, and unless their scholarship is supplemented at the normal school, the common schools of this country must suffer. When the province is supplied with schools sufficiently equipped to give the necessary academic training, much of the general instruction which is now given at the normal school may be dispensed with. As it is, less and less attention is being given to such subjects as are at least fairly mastered at the public school; *e. g.*, arithmetic, geographical topography, technical parts of grammar, etc.

The Superintendent, after enumerating the increasing duties of inspectors, and the efficient manner in which these have been performed, recommends the appointment of an additional inspector.

Compulsory education is recommended, and the following substantial showing urged in its favor:

The enrolment of pupils was higher for the year 1888 than in any former year except 1879. This is so far satisfactory, but the highest number yet enrolled fails to reach large numbers of the youth of the country. We have fully 15,000 children in our midst growing up in ignorance, and very probably acquiring habits ruinous to themselves and liable to become troublesome to the state. With such facts before us it is clear that some provision ought to be made whereby these children may be brought under the advantages which the state has provided for them. There are, no doubt, difficulties in the way of effectively carrying out a law compelling the attendance of children at school in all parts of the province, but if the legislature is not at present prepared to adopt the principle universally, I respectfully recommend that it pass a measure empowering boards of trustees in cities and incorporated towns at least, to enforce such attendance as shall ensure due attention to the education of all educable children within the limits of their jurisdiction. The Board of Trustees of St. John has repeatedly solicited that such authority be granted them, as likewise has the School Board of St. Stephen; and the Board of Fredericton in their report in Appendix C recommends that "a compulsory attendance clause be inserted in the Common Schools Act, so that no children may be allowed to grow up to manhood without the possession of sufficient knowledge to enable them to become good citizens." The inspectors, too, who are painfully cognizant of the defects in the system in this respect, have time and again recommended the adoption of some remedial measure.

Teachers' Salaries.

We commend to all concerned the careful consideration of the following apothegmatic comment upon this subject, which we quote from the report for 1888, of the Superintendent of Education in Nova Scotia. In no other direction can we look for a remedy for the evil of low salaries. The teacher must acquire the skill, that is education and the power of educating. The educational authorities are evidently moving in the direction of stimulating such a development. But no government in this constitutional era can compel the people to continue paying for anything, even education (so called) itself, more than it is worth. The profession of teaching, to support life, must become a life's work, just as in other noble professions.

"In most of the grades there have been slight reductions in the average rate of salary. As the excess of supply over demand has continued to increase, this fact ought not to excite surprise. It is becoming clear to every one who chooses to think on the subject that the most effective way to improve the remuneration of teachers lies in surrounding their work with the pre-emptions and safeguards that are the prerogatives of skilled labor. An elevation of the standards of admission in the direction of a specific professional training would benefit no one interest so much as the teaching body itself. Until a closer equation of supply and demand is brought about, recommendations on the subject of salaries, whether given to employers or employed, can produce but little effect."

We clip the following from the New York *Independent*, so that our readers may judge to what extent our public school courses of study are, in their scientific outline, abreast of the best taught in the republic. The grammar schools in the States correspond somewhat to grades VI., VII. and VIII. of the Nova Scotian "common" schools.

The committee appointed by the American Society of Naturalists to "develop a scheme of instruction in natural science to be recommended to the schools," have made a report in which they say that instruction in natural science should begin in the lowest grades of primary schools and continue throughout the curriculum; that in the lower grades the instruction should be chiefly by object lessons; that a more systematic course should be arranged for in high schools; and that an elementary acquaintance with one or more departments of natural science should be required for admission to college. In the primary and the lower grades of the grammer schools the committee recommend that the study of plants and animals should be the main part of the scientific work. The botanical instruction should commence with such simple exercises as drawing and describing different forms of leaves, and should gradually advance to the easier and more conspicuous flowers, and later to the more obscure and difficult forms of flowers, the fruits and seeds. The committee add;

"The zoological instruction in the lower schools should not attempt a systematic survey of the whole animal kingdom, but attention should be directed chiefly to the most familiar animals, and to those which the pupils can see alive The common domesticated mammals should first be studied, and later the birds, the lower vertebrates, the insects, crustacea, and mollusks. While the range of zoological instruction must be limited as regards the number of forms studied, those few familiar forms should be so compared with each other as to give the pupils, very early, some conception of the main lines of biological study—morphology, physiology, taxonomy.

"Special prominence should be given to the study of plants and animals which are useful to man in any way; and the teacher may advantageously, from time to time, give familiar talks in regard to useful products of vegetable and animal origin, and the processes of their manufacture

"Attention should also be given to the more obvious characteristics of the kinds of minerals and rocks common in the region in which any school is situated, and to such geological phenomena as are comparatively simple and easily observed.

"The subject of human physiology and hygiene is of so immense practical importance, and so few comparatively of the pupils ever enter the high school, that we regard as desirable some attempt to teach the rudiments of the subject in the grammar, and even in the primary schools.

"We would recommend the introduction of exceedingly rudimentary courses in physics and chemistry in the highest grades of the grammar school.

"We would recommend as perhaps the most desirable branches of science to be included in the classical courses in the high school, and to be required for admission to college, physical geography, phænogamic botany, and human physiology. The first is suggested as tending to keep alive in the student's mind a sympathetic acquaintance with nature in its broader aspects; the second, as affording unequal opportunities for discipline in observation; the third, as affording knowledge of the greatest practical importance.

"The rudiments of physics and chemistry, which we propose for the grammar schools, will enable physical geography and physiology to be intelligently studied in the early years of the high school course."

THE thanks of the Truro Kindergarten Committee are tendered to Mr. E. Steiger, of New York, for his kindness in presenting a portrait of Frœbel. It was placed in position with a few suitable remarks to the children about the good and great man who loved them so dearly that he devoted himself to their service. Any one visiting New York should call at 25 Park Place for the special purpose of inspecting kindergarten material and literature. We saw parcels addressed to Russia, Denmark, Schleswick-Holstein, and Sweden, and on expressing surprise were informed that Mr. Steiger could supply, in some cases, a better article at a cheaper rate than the European manufacturer.—[COM.

St. Francis Xavier.

For some time past it was becoming apparent that additional accommodation would be necessary in the near future, if not at present, to meet the requirements of the yearly increasing number of pupils seeking admission to the Antigonish Academy. This necessity was faced by the proper authorities with characteristic promptness and liberality, by the erection, in the course of the summer and fall, of a very handsome brick and stone edifice, sufficiently large to meet the wants of those seeking higher education in this part of the Province for generations to come. The old structure was all removed with the exception of one wing, which was found to be not inconsistent with the unity and general effect of the architectural design followed in the construction of the new building. It is certainly one of the finest, most commodious, and best appointed of the kind in this Province.—*Report, Inspector MacDonald.*

Educational Institute of New Brunswick.

ELEVENTH REGULAR MEETING, TO BE HELD AT THE PROVINCIAL NORMAL SCHOOL, FREDERICTON,

JUNE 26th, 27th, 28th—1889.

Programme.

1ST SESSION, TUESDAY AFTERNOON.—Enrolment. Election of Officers. Report of Executive Committee. Other business.

2ND SESSION, TUESDAY EVENING.—Public meeting. Address of welcome by the Mayor of Fredericton. Addresses by other prominent speakers. Music by a special choir.

3RD SESSION, WEDNESDAY MORNING.—1. Paper on "The demand which the Common School is making on the Common School Teacher," by Eldon Mullin, M.A., Principal of the Normal School.

2. Paper on "Composition and critical reading *versus* the formal teaching of English Grammar," by George U. Hay, Ph.B., Principal of the Victoria and Girls' High School.

4TH SESSION, WEDNESDAY AFTERNOON.—Paper on "Compulsory attendance at School," by Frank H. Hayes, Superintendent of the Portland schools.

5TH SESSION, WEDNESDAY EVENING.—Paper on the question "Is the Common School meeting the demand for Practical Education"? by P. G. McFarlane, B.A., Principal of High School, St. Stephen.

6TH SESSION, THURSDAY MORNING.—1. Paper on "The Superannuation of Teachers," by S. C. Wilbur, B.A., Principal of High School, Moncton.

2. Paper on "A Programme of School work for Friday afternoon," by George J. Oulton, Master of Superior School, Dorchester.

7TH SESSION, THURSDAY AFTERNOON.—1. Paper on "Public School education—Its relation to the Political, Social, and Moral tendencies of the Times," by Philip Cox, B.A., Principal of Harkins School, Newcastle.

2. Election of Executive Committee.

8TH SESSION.—THURSDAY EVENING.—Paper on the question "What provision might be made for Technical Education in the Province"? by W. S. Carter, M.A., Inspector of Schools, St. John.

Arrangements have been made for discussions to follow the reading of the several papers. The names of the leading speakers will be published later. There will be opportunity for the introduction of business at several of the sessions. The usual travelling arrangements will be made.

HERBERT C. CREED,
Secretary.

THE *British American Citizen* newspaper offers seven prizes for competition among people now resident in Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland, as follows:

$10.00 for the best Essay on any of the following subjects:

1. Nova Scotia's mineral resources as an investment for capital.
2. The Maritime Provinces and their possibilities for farming and fruit growing.
3. The development of the fisheries of the Provinces, and their worth as an investment.
4. The early settlers of the Provinces, from New York, Massachusetts, and Connecticut.

FOR YOUNG PEOPLE.

$5.00 for the best Essay on either:

1. The botany of the Maritime Provinces.
2. The salt water and fresh water fishes.
3. The common birds and their habits.

All must be in before May 1st. *British American Citizen*, 7 Bromfield Street, Boston, Mass.

PERSONAL NOTES.

Inspector Mersereau is visiting the graded schools of Newcastle and Chatham this month.

Inspector Carter is examining the schools of the city of St. John this month.

Miss Mary J. Copp, and Minnie A. Copp, twin sisters, are teaching in adjoining districts, Coverdale, Albert County, N. B.

James E. Creighton, B.A. (Dalhousie, 1887), who won a fellowship at Cornell University last fall, has been appointed Instructor in Philosophy in the same university. Mr. Creighton is a Pictovian, and was a Munro exhibitioner in the University of Dalhousie, from which he graduated with first-class honors in mental and moral philosophy.

Mr. A. W. Macrae, St. John, has been successful in passing the intermediate examination for the degree of Bachelor of Laws, in London University, England. Mr. Macrae, who is a graduate of Dalhousie College, N. S., is the first Canadian to pass examination without studying in an English university.

The Providence (Rhode Island) *Journal*, of a recent date, refers to an interesting paper on "The Rhode Island Emigration to Nova Scotia," by Prof. Ray Greene Huling, who visited Hants County a few months ago for the purpose of historical research. This paper, after introductory remarks, deals particularly with the settlement of the townships of Falmouth, Newport, and Sackville (N. B.), by Rhode Island loyalists in 1760. Prof. Huling showed that these emigrants had played an important part in building up the fortunes of New Brunswick and Nova Scotia.

QUESTION DEPARTMENT.

Questions and Answers.

The excellent monthly, THE EDUCATIONAL REVIEW, published at St. John, is doing good work in the publication of star tables, and in awakening interest in astronomical knowledge generally. Is not, however, "the first point of Aries" mentioned as coincident with the vernal equinox, now a merely technical expression? Sayce tells us that this coincidence began in the year 2450 B. C. We believe "Precession" carries the real equinoctial point backward one sign in 2151 years. Consequently it would, we suppose, have retrograded to the sign Pisces nearly 300 years before the Christian era, which accounted for the prevalence of the fish on Christian tombs in the catacombs of Rome. If this be correct, the sun's place at the vernal equinox would now be in Aquarius, as it was in Taurus before 2450 B. C., which accounted for bull worship among the Chaldeans and Egyptians. Will the St. John EDUCATIONAL REVIEW tell us whether or no we are right.—*The Critic* (Halifax).

The intelligent and patriotic tone of our contemporary has always inspired us with the best feelings towards it; yet it shows us no mercy. However, the questions mooted are fair, and we shall attempt them.

1. The "first point of Aries" is a real point in the ecliptic—where it is crossed by the equinoctial line. The centre of the sun was exactly over that point last month, March 20th, at 5h. 48m. 8s. in the morning, 60th meridian time. Suppose that point on this occasion to be marked by a star. The sun moves eastwardly from this point with a daily motion of from 57 to 61 seconds of arc, according to the earth's position in its orbit. In the sidereal year of 365d. 6h. 9m. 9.6s. the sun's centre would be again over our initial star. But the first point of Aries would not be there. During the year the equinoctial line was slowly moving westwardly, so that the sun would have to cross it about 50.1 seconds of arc on an

average before it came to the star. The *tropical* or common year would be completed upon the sun's arrival at the intersection of the equinoctial and the ecliptic, 50.1 seconds of arc, or 20m. 19.9s. of time before it could reach the initial star. So that by adding 365d. 5h. 48m. 49.7s. to the date given above, we find when the sun is at the first point of Aries in 1890. In 20m. 19.9s. more it would arrive at the star where the first point of Aries was in March 20th, 1889. It would take 25,868 years for this average difference of 50.1″ annually to amount to 360°. The motion is so very slow that lines of declination and of right ascension, which change their position with the equinoctial, will leave these lines on our star maps practically correct for some years into the next century.

2. A *sign* of the zodiac always means a length of 30° on the ecliptic. It therefore follows that every sign is slowly moving westward along the ecliptic; and in one-twelfth of 25,868 years, that is, in 2,156 years, Aries will cover exactly the stars at the beginning of the period covered by Pisces.

3. The *constellations* of the zodiac gave the names to the *signs*. These *constellations* as they have been delimited for us by Argelander, cover the ecliptic, but are irregular in shape and even unequal in length, some being as short as 19°, and others as long as 48°; while theoretically they should be each 30°. It is evident that when the present order of *signs* was established they must have approximately coincided with the *constellations*. When was that time?

4. During the last month the brilliant planet Venus could have been seen passing a little below a pair of stars, one of the second magnitude, the most westerly of the third magnitude. These are, respectively, Alpha and Beta, of the constellation Aries. About 128 B. C., when that great ancient astronomer, Hipparchus, was developing the science, the *vernal equinox* was near Beta Arietis (beside Venus, on the 7th March,) which was nearly on the western boundary of Aries, contiguous to Pisces. The *signs* and *constellations* were then coincident, so far as they could be from the irregular boundary of the constellations. Since then 2017 years have passed away. Shortly before the time of Christ, the vernal equinox, or the first point of the *sign* Aries moved westwardly into the *constellation* Pisces. It is not yet in the constellation Aquarius, nor will it be for at least 300 years to come, as Pisces is one of those constellations which is longer than the average 30°.

5. The prevalence of fish forms in the ornamentation of Christian tombs in the catacombs of Rome are not likely to have any astronomical signification. The Christians of that time were not likely to have good opportunities or even the leisure to cultivate such tastes. Some of the decorations show figures of the miracles of the loaves and fishes, among other scenes from the history of Christ. The Apostles, too, were fishermen. Fish pictures would, even for these reasons, be expected to appear often in their decorations. But these simple minded men could more easily see a great mystery in the remarkable lettering of the word fish, taken from their Greek testament, than in abstruse astronomical knowledge, so generally unknown even to the comfortable Christian of to-day, who can get it, much of it, even in a free advertising almanac.

The Greek for fish is: *Ichthus*. There were here, in order, the initials of the name above all names—the name of Him for whom they lived, the name of Him for whom they died: *Iesos Christos, Theou Uios Soter*, "Jesus Christ, the Son of God the Saviour." The fish, *Ichthus*, was therefore the emblem, the symbol of the great name, and its attributes, which should not be even lightly spoken.

6. Over 2000 years before the time of Hipparchus, or shortly after the date of the deluge, according to Archbishop Usher's chronology, a little later than 2450 B. C., the vernal equinox would be in the proximity of the Pleiades, near the western boundary of Taurus. Bull worship would account for the honorable titles having been given to the first sign beginning at the vernal equinox.

There is a probability that the constellations of the zodiac may have received substantially their present names at even as early a date as the above. This seems to be indicated by some other curious facts. In the ancient cabala of the Jews the bull is the first zodiacal sign. Among the Persians, who numbered their successive signs by the letters of the alphabet, A stands for Taurus, B for Gemini, and so on. Among the Chinese the commencement of the sun's annual motion is referred to the same constellation. In Thebes the zodiacal signs in a great sepulchral chamber begin with Taurus, and so does the zodiac of the pagoda of Elephanta.

This would seem to indicate that over 2000 B. C. the elements of astronomy had been studied and formulated, and even the same idea of nomenclature, in some points, made common to various peoples. It appears to us most probable that the bull must have been worshipped before he was placed in the sky. His position must have depended on his popular estimation. Once enthroned in the sky, however, the bull's prestige would be in a fair way to be increased.

Another curious coincidence exists in connection with the cluster called the Hyades (the rainers), near Aldebaran, in the bull's eye. When the vernal equinox was in its proximity, according to the generally received chronology, the great rain of the time of Noah deluged the earth. Their "rainy" character was handed down by tradition to classical times. When did the tradition originate? Of course their heliacal rising opened the rainy season in some countries. We may add that there are some considerations which suggest even a still earlier origin for the names of the zodiacal signs or constellations.

BOOK REVIEWS.

SCHILLER'S JUNGFRAU VON ORLEANS, edited with an introduction and notes, by Benj. W. Wells, Ph. D. Boston: D. C. Heath & Co, publishers. This is one of the best books with which to begin the study of the German classics. The language is in general clear and simple, and the difficulties that present themselves have been lightened very considerably by the judicious notes and historic facts grouped together by the editor.

A companion volume to the above for advanced students in French is Lamartine's JEANNE D'ARC, edited with notes and vocabulary by Prof. Albert Barrère, and published by D. C. Heath & Co. Both volumes are neatly got up and clearly printed.

The Peter Redpath Museum, McGill University, Montreal, has issued a volume of notes (100 pages) on specimens of EOZOON CANADENSE and their relations. It is edited by Sir J. William Dawson, who makes the following comment, among others towards the end. "I took some interest in the discovery of *Eozoon* by Sir William Logan and his assistants, and it happened that I was the first to recognize its minute structures in some slices shown to me by Dr. Sterry Hunt, in connection with a paper which he was preparing on the mineralisation of fossil remains. I undertook the examination of the specimens at the request of Sir William Logan, and after offering to the late Mr. Billings, the palæontologist of the survey, to give him all the aid in my power if he would undertake the investigation. This, however, he declined, alleging the pressure of other work and his want of familiarity with microscopic research.

On the completion of my notes on the numerous specimens, not only of *Eozoon* but of *Laurentian* and other crystalline limestones, submitted to me by Logan, I placed them with a number of camera drawings prepared by the artist of the survey, in the hands of Sir William, who was then about to proceed to England. Foreseeing the scepticism with which the announcement of Laurentian fossils was sure to be received, and not wishing to be involved in further labor and controversy, I advised him to place my notes along with the specimens, and his own geological notes and those of Dr. Sterry Hunt on the mineralogical questions, in the hands of Dr. Carpenter and Prof. Rupert Jones with *carte blanche* as to any use which their experts in the study of Foraminifera might be disposed to make of them. I had hoped that the matter was thus finally out of my hands, but the complicated and difficult questions which have since arisen have made it a matter of obligation to devote more time to them than has been either agreeable or profitable. With the present publication I dismiss the matter finally, and without any feeling whatever as to the ultimate verdict of science with respect to those curious and puzzling specimens."

Sonnenschein's CYCLOPŒDIA OF EDUCATION; a hand-book of reference on all subjects connected with education (its history, theory and practice). Published by C. W. Bardeen, Syracuse, N. Y. To those engaged in teaching this is a veritable *vade mecum*, every subject of interest in teaching being discussed in proportion to the importance that each demands. Among the writers of articles are Oscar Browning, Sir Philip Magnus, Richard Wormel, and other celebrated specialists in education. Although the treatment of subjects is not exhaustive, there is sufficient in this volume of 560 pages to make it a most valuable compendium of educational knowledge, and adapted to the wants of elementary as well as advanced teachers. Opening the book at random we find treated under T the following subjects: Jeremy Taylor, Teachers' Associations, Technical Education (eight pages), Temper, Temperament, Terms, Text-books, Textual Criticism, Edward Thring, Timidity, Tonic-Sol-Fa Method, Training of Teachers, Truants, Truthfulness, Tuition by Correspondence, Tutor, and other lesser subjects.

ORTHOEPY MADE EASY: A royal road to correct pronunciation. Published by C. W. Bardeen, Syracuse, N.Y. The plan of this book of 100 pages is to arrange words, commonly mispronounced, into sentences, followed by a key in which the words are pronounced correctly according to Webster and Worcester. The plan is an excellent one; and if the author had discarded many foreign and technical words, it would have had greater value as a general exercise book in pronunciation. As it is, it is well adapted for high schools and the improvement of private students.

BOOKS RECEIVED.

STICKNEY'S READERS, first to fourth, published by Ginn & Co., Boston; NATURE READERS, No. 3, Sea-Side and Way-Side, published by D. C. Heath & Co., Boston; OUTLINES OF LESSONS ON BOTANY, by Ginn & Co., Boston. These and others will be reviewed next issue.

EXCHANGES.

The *Forum* for March contained an attack on the public school system, by Cardinal Manning. In the April number Prof. George P. Fisher, of Yale, makes a reply, and points out the necessary conflict between Catholicism, as interpreted by Cardinal Manning, and American institutions, defending freedom of religion and the public school.... *Wide Awake* for April, published by D. Lothrop & Co., Boston, is a model number, whether for home reading or for supplementary reading in school....*Popular Science Monthly* for April has an excellent editorial on "Learning to Think."....*St. Nicholas* for April has finely illustrated articles, among which, interesting to Canadian readers, is "The Bells of Ste. Anne." ....The *Bookmart*, (published at Pittsburg, Pa.,) for March has an interesting table of contents, the "Essays from

The Forum continues to hold its place as the foremost of our magazines for the variety, the value, and the weight of its contributions. N. Y. Times

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A sample copy of the Forum will be sent free to any one who will send us the name of a library or reading room where it is not now taken, or who will send us the names and address of six educated persons who read thoughtful literature.

Elementary Schools" contain some gems....Dr. Honeyman is still writing on the fauna of the deep-sea cable—an instalment each week—in the Halifax *Presbyterian Witness*. ....The *Enterprise* has a two column article on Venus from the pen of Principal Cameron, astronomical lecturer in the Nova Scotian Summer Science School....The Halifax *Herald*, March 26th, had a timely and forcible article on the encouragement of bird-slaughter by the ladies of Halifax, from the pen of Mr. Harry Piers....The P. E. I. *Guardian* is showing a good example in having a well written popular scientific article each week in addition to the ordinary newspaper material....The *Science of Photography* for March has a couple of exquisite photo-engravings, and a very interesting article on the artistic in relation to the prize awards for photographic views....The *American Geologist* for February contains many interesting articles, among which we would name the following: "Glaciers and Glacial Radiants of the Ice Age," by Dr. E. W. Claypole. "Physical Theories of the Earth in Relation to Mountain Formation," by *T.* Mellard Reade. Editorial comment—"A New Glacial Theory." It is a fine monthly and is published at Minneapolis, Minn., U. S. A. It has an editorial staff of seven of the best American geologists....The *Century* for April is a valuable historical number, containing an account of Washington's Inauguration one hundred years ago—admirably illustrated....The *American Naturalist* for January opens with an able article on the Algo-lichen hypothesis. Its general notes on, 1. Geography and Travel; 2. Geology and Palæontology; 3. Mineralogy and Petrography: 4. Botany; 5. Bacteriology; 6. Zoology; 7. Entomology; 8. Embryology; 9. Physiology; 10. Psychology; 11. Archæology and Anthropology; 12. Microscopy, well represent the news of the natural sciences....The Bridgetown *Weekly Monitor* has an able three column article descriptive of Chili, from the pen of Sr. Don Archibald F. Troop, of the Instituto Internacional de Santiago....The *Microscope* for March has a fine list of contents under the heads, 1. Original Communications; 2. Proceedings of Societies; 3. Elementary Department; 4. Editorial; 5. Zoology; 6. Botany; 7. Microscopy; 8 Pathology; 9. Miscellaneous; 10. News and Notes; 11. Book Reviews; 12. Correspondence and Queries; 13. Exchanges.

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As our year closes with the May number, will all whose subscription expires at that time kindly send us the amount *at once*. It will thus save us the trouble of sending bills for so small an amount. Such reminders sometimes ruffle the placid temper of the one receiving the bill. Dear friend, do not allow your temper to be ruffled.

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A. E. Coldwell, M. A., Professor of the Natural Sciences, and Curator of the Museum.
L. E. Wortman, M. A., Professor of Modern Languages and History.

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A. H. MacKAY, B. A., B. Sc., Editor for Nova Scotia.
ALEX. ANDERSON, LL.D., Editor for P. E. Island.
G. U. HAY, Ph. B., Editor for New Brunswick.

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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

THIS ISSUE closes the second volume of the REVIEW. To our subscribers who have, by their generous encouragement, done so much to help the REVIEW during the past year, and to those who have assisted greatly in extending its influence, and contributing to its columns, we extend our sincere thanks.

THE programme of the N. S. Summer School of Science has been issued. It furnishes a very admirable and complete working course in natural science, together with illustrative lectures, valuable to teachers. The school will convene on Monday, July 22nd, in the rink at Parrsboro, and will close August 2nd. The opening address will be delivered by Principal A. H. MacKay. Prof. F. H. Eaton, of the N. S. Normal School, is the President, and from his activity and energy, combined with the strong corps of talented instructors in the several departments of science, there is every reason to expect a prosperous and interesting session.

THE N. B. Natural History Society has conducted a series of elementary lectures for teachers and students during the past winter in chemistry, physiology, geology and botany. During the spring months the members of the class have been making Saturday afternoon excursions in the neighborhood of St. John for the purpose of carrying on practical work in geology and botany.

THE Executive Committee of the N. S. Educational Association met at Truro, Good Friday, and arranged a programme of subjects for the forthcoming meeting which will take place during the second week of July.

THE summer course in botany, in connection with Harvard University, will be held at the Botanic Garden, Cambridge, beginning Monday, July 1st, at 9 a. m., and ending Saturday, July 27th. It will be under the instruction of Mr. W. F. Ganong, assistant in botany in the college, assisted by Mr. G. J. Pierce, of the Lawrence Scientific School.

WE have to thank the Superintendent of Education of British Columbia, S. D. Pope, Esq., B.A., for a copy of the seventeenth annual report on the public schools. We have not been able to complete the study of this highly interesting and most creditable exposition of the school system and work in our Pacific Province. Suffice it to say at present, that in some respects we in the east are behind. For instance, the examination papers for admission to the high schools, show one paper on "Anatomy, Physiology, and Hygiene." The mid-summer high school examination papers are published, and among them we find a paper on "Education," and another on "Music." Teachers have to pass for second-class, Grade B, a very stiff examination on *music* and the ordinary staff notation. For second-class, Grades A and B, a long paper on *linear drawing*. For second-class, Grade A, a long paper on *zoology*, and another on *astronomy*; and for first-class Grades A and B, a formidable paper on *geology*, in addition to such subjects as are required of our teachers here. British Columbia has already been moving in the direction which the REVIEW has been commending to the consideration of the people of the Atlantic Provinces.

Convocation at Dalhousie College, Halifax, took place on Thursday, April 25th, when the degree of B. A. was conferred on sixteen graduates, and the degree of Bachelor of Laws on ten graduates. The governor-general's medal was won by A. G. Laird. The year just closing has been a very prosperous one for Dalhousie. The number of undergraduates in attendance is greater than that of any previous year of its history.

Prof. Burwash, of Mt. Allison, and Prof. Kierstead, of Acadia College, have been appointed degree examiners by the senate of the University of N. B., in place of Rev. Dr. Macrae and G. Herbert Lee, Esq., resigned.

The Report of Superintendent Montgomery, of the P. E. Island schools, for 1888, is received. The total number of enrolled pupils was 22,478; daily average attendance, 12,248; percentage of attendance, 54.49; number of teachers employed, 509; total expenditure for education, $147,455.28. The following is the average salaries paid to teachers: Male, first class, $438.00; second class, 267.77; third class, $212.75; female, first class, $375; second class, $217.52; third class, $150.67.

The *Forum* and the Educational Review for one year for $5. Price of the *Forum* alone, $5. Begin with the June number of the Review, the first of Volume III.

The following Atlantic Province students graduated as Doctors of Medicine at the College of Physicians and Surgeons, Baltimore, recently.

S. Whitfield Hartt, Fredericton, N. B. (Prize man in anatomy).

F. D. Mosher, Hants Co., N. S.

R. M. Smith, Hants Co., N. S.

The following passed in undergraduate examinations:

S. S. Smith, Pictou Co., N. S.

Chas. M. Weeks, Hants Co., N. S.

Dr. J. G. Fitch, who has had good opportunities to observe American schools, believes "that for accuracy and solidity in acquirement, for mental activity, and for interest in their work, the scholars in the best of our English elementary schools would hold their own, and compare most favorably, age for age, with the scholars in the best schools I have ever visited."

Inspector Smith of New Brunswick says, "From what I can learn I believe the assessment law would be more acceptable to the people if it were so amended as to make all property taxable in the district in which it is situated.

We hope that Arbor Day in New Brunswick will be suitably observed by the planting of trees on schoo grounds. Much has been done in the past few years to improve the surroundings of school-houses and make them more pleasant and attractive. Much depends on giving the pupils of our schools stimulus and proper direction in this important matter. Whoever plants a tree and ensures its growth by care and attention is a public benefactor.

The Pictou Academy Gold Medal for 1889, has been won by Geo. E. Ross, Newport, Hants Co., N.S. The Silver Medal has been won by James Albert Arbuckle, Pictou, at the terminal examination just closed.

The *Quarterly Journal* of the Geological Society for November, 1888, publishes a paper by Sir J. William Dawson, K.C.M.G., etc., on the Eozoic and Paleozoic Rocks of the Atlantic Coast of Canada, in comparison with those of Western Europe and of the interior of America. He sums the whole at the close in the following words:

> "In the rocks from the Laurentian to the Trias inclusive, we have on the two sides of the Atlantic a continuous parallelism in the following points:
>
> 1. In mineral character and order of succession of aqueous deposits.
> 2. In the occurrence of great earth-movements of elevation, depression, and plication at corresponding times.
> 3. In the ejection of like kinds of igneous rocks in connection with like members of the aqueous series.
> 4. In the order and introduction and extinction of animals and plants.
> 5. In the specific identity of animals and plants in corresponding formations.
>
> All this, I think, points to an actual contemporaneity of the successive changes on the two sides of the Atlantic basin, and to a special correspondence of the formations of the respective marginal areas as contrasted with those of the continental plateaus. It also indicates a persistence, on the whole, of the oceanic character of the Atlantic depression.
>
> Lastly, it shows the necessity in any system of geological classification of distinguishing the continental plateaus, the lines of great foldings and of igneous action, and the ancient ocean margins from each other, and of adapting our arrangements and nomenclature to their actual diversity. In order to do this, while adopting common designations for the great ages of geological time, and for those systems of formations which mark the successive submergences and emergences of the continental plateaus, separate classifications must exist for the different kinds of areas in their details. It is also, I think, necessary that we should not tie ourselves down to hard-and-fast lines, either as to the limits of systems or as to the relative values of their divisions in widely separated localities, as these differ in nature, and nothing is to be gained by conventional arrangements overlooking these differences.
>
> Finally, I can imagine that many questions which have not occurred to me may present themselves to the minds of other geologists who may read or hear this paper. Should I possess any facts tending to the solution of such questions, and not stated in the above pages, they will be at the service of any one desirous to use them for the advancement of science."

FORESHADOWED CHANGES.

No one can think of charging the educational department of Nova Scotia with a lack of caution in the introduction of reform. Not only has the goodness of the change to be thoroughly demonstrated, but the readiness of the people to receive it must be understood. While this procedure may appear too slow for those who feel the pressing need and the evident advantage of a change to put us in harmony with our changed environment, it is, nevertheless, the only safe method. Nothing is more necessary than faith in the stability of order. Change, when predicted and expected, is simply adaptation. It is the jar of the unexpected that strains the social fabric. Here is what is foreshadowed. We quote from the report of the Superintendent of Education for 1888:

> In my last report I suggested the desirability of importing into our standards of license more distinctively professional features than they now contain, and in the same connection submitted in outline a scheme for the reconstruction of our examination system, which has remained practically unchanged for upwards of twenty years. The general purpose and plan of this reconstruction have met with a very considerable degree of approval. Still, as the changes proposed are important and somewhat far-reaching in their consequences, I am not so anxious to press them forward for immediate adoption, as to prepare the way for their successful introduction when matters of detail have been carefully worked out, and a still stronger public opinion created in their favor.
>
> Scholarship, though of prime importance, is not in itself a sufficient preparation for the highly complex work of training youth Our existing tests should be taken to prove, not that a successful candidate is qualified to assume charge of a school, but simply that he has intellectual acquirements and culture qualifying him for entrance on a special course of preparation for that duty. Scholarship, in short, is but one of a number of essential qualifications. A too common experience proves that even a high degree of it may co-exist with fatal incapacity to realize in practice the most commonplace ideal of a successful school.
>
> I respectfully re-submit for consideration the substance of the recommendations contained in my last report.
>
> 1. The awards of the Annual Provincial Examination shall be simply certificates, according to class, of sufficient general scholarship, but shall in themselves confer no authority to teach.
>
> 2. This authority must be acquired by adding to a general scholarship certificate graduation at our own or other approved normal school, or a diploma certifying due professional competency, obtained at a properly searching and comprehensive examination in the theory and practice of teaching.
>
> I am convinced that every sphere of educational activity would be benefited by the differentiation thus proposed. The various classes of schools—normal, academic and common—freed from hurtful competition, would each have its proper work to do in training teachers for our youth. A powerful check would be given to the excessive and injurious influx into the teaching body of half-grown boys and girls, many of whom now enter, with ignorant levity, a profession for whose duties they have made no proper preparation. As to the beneficial bearing of the proposed changes on the dignity, permanency and emoluments of the teacher's own position there can be no doubt whatever.
>
> It is natural that inquiry should be directed to the ability of the normal school to meet the increased burdens likely to be laid upon it by the proposed re-adjustments. Considering this question, we should bear in mind that in any given year, the number of persons seeking professional preparation would fall very much short of the number who at its commencement had obtained non-professional certificates, which no doubt would be sought by many as valuable testimonials of scholarship, without any intention of putting them to an ulterior use. While it would not be in the interests of education that very extensive advantage should be taken of the alternative professional examination, that provision would meet the convenience of some, especially of teachers applying for advance of grade, and would so far lessen the strain on the normal school facilities. Further, I am of opinion that some separate or special arrangement should be made for the professional training of teachers of the third class, so long as the retention of that class may be deemed necessary. In Ontario, where first and second class diplomas can only be obtained by classification at one of the two provincial normal schools, the training of third class teachers is effected by an arrangement with the managers of high schools, one or more of which in each county are organized for professional purposes for an annual term of ten or twelve weeks as "County Model Schools." Classification at one of these model schools is the necessary condition of obtaining third class licenses. Though there are some difficulties in the way, I am of opinion that a similar use of our county academies, or a certain number of them, would not be found impracticable. And on the whole subject, I conclude, that the normal school, relieved of the large amount of ordinary class instruction now forced upon it, would meet all the demands likely to accrue under the suggested re arrangement, and at the same time operate more directly and much more powerfully for the general advantage of education.

The country is ready, waiting for some such development of its educational system, we believe. If any are in doubt of this we give them now the best opportunity we can to correct or modify our impressions.

Friday, May 17th, has been chosen as Arbor Day by Inspectors Wetmore and Carter for the schools in their respective districts. It is quite probable that this will be the date decided upon by the other Inspectors.

Dr. Edward Judson is expected to lecture before the Athenæum of Acadia College on the evening of the 23rd of May.

Atlantic Province Teachers in the Pacific Province.

H. M. Stamberg, Esq., B.A. (Dalhousie), a Pictovian, is Principal of the High School in New Westminster, British Columbia.

Robt. Landells, Esq., B.A. (Dalhousie), is Principal of the Cedar Hill School, B. C.

Miss Jessie R. Olding, late of the Pictou schools, is Principal of the Metchosin School, B. C.

J. P. McLeod, Esq., B.A. (Dalhousie), is Principal of the Victoria High School.

Robert G. Gordon, Esq., a Pictovian, has charge of the Lillooet School, B. C.

Michael McKinnon, Esq., M.A. (Halifax), has charge of the Mayne Island School.

D. Wilson, B.A. (N. B. University), is Inspector of Schools at New Westminster, B. C.

We understand that there are many more Atlantic teachers in the Maritime Province on the other ocean, but we have not yet definitely heard from them. With such well known and able teachers in leading positions, British Columbia, though younger, may possibly lead the Eastern Provinces in educational development.

COLLEGE ANNIVERSARIES.

The anniversary exercises at Acadia will occur this year on Thursday, 6th of June. The usual public exercises of that day will begin at 11 a. m. In the evening the Alumni will give an "At Home" in the college hall. The public exercises of the Seminary will be held on Wednesday evening, June 5th, and those of the Academy in the afternoon of the same day. The Senate will hold its session on the 5th of June. It is understood that the Senate and Governors will deal with some important questions touching the reconstruction of some educational departments at Acadia.

The following is an outline programme of exercises of Mt. Allison convocation week:—Sunday, May 26th, 11 a. m., Anniversary Sermon of Theological Union, by Rev. W. W. Brewer, St. John; 7 p. m., Baccalaureate Sermon, by Rev. W. H. G. Temple, A.M., Boston. Monday, May 27th, 9 a. m., Anniversary of Male Academy; 3 p. m., Annual Meeting of University Senate; 7.30 p. m., Theological Union Lecture, by Rev. F. A. Wright, M.A., Hillsburg. Tuesday, May 28th, 9 a. m., Anniversary of Ladies' College; 2 p. m., Gymnastic Exhibitions; 4 p. m., Business Meeting of Alumni and Alumnæ Societies; 7 p. m., Alumni and Alumnæ Anniversaries, addresses by Miss Sarah Smith, St. John, and Principal Anderson, LL.D., Prince of Wales College, Charlottetown; 9 p. m., Conversazione in Memorial Hall. Wednesday, 29th, 9 a. m., University Convocation; 3 p. m., Annual Meeting of Board of Regents.

THE POETRY OF ROBERT BROWNING.

An introduction to the poetry of Robert Browning by W. J. Alexander, Ph. D., Munro professor of English language and literature, Dalhousie College and University, Halifax, Nova Scotia. Ginn & Co., Boston.

We entirely agree with Dr. Alexander when he says in his preface "that he is strongly averse to that study of literature which consists in reading about books rather than in reading the books themselves." But we are of opinion that we may go farther and express it as our conviction that the discipline, both intellectual and moral, which one has to submit to in unravelling the complexities of a really difficult book without any external aids, more than compensates for the time and pains which have been expended upon the work. Whatever analytical power one may be gifted with, whatever faculty he may possess of realizing the situation and assuming the place of his author, and thus divining the sequence of his thoughts, whatever resolution to strive in spite of many a failure he may be capable of, all his experience in the solution of perplexing questions, and all the resources of his knowledge and ingenuity are called into requisition, and are not more than sufficient for the task. And the result is not only an extension of his knowledge, but from the magnitude of the effort which he had to put forth, a more thorough assimilation of his acquirements and a greater mastery of his powers.

The majority of readers, however, have not time, and comparatively few, inclination to undertake such work. They either leave it alone or avail themselves of the assistance which may be within their reach. In books of poetry particularly this has been most noticeable, and in the works of no great poet so much as in those of Robert Browning. The language is in many cases so obscure, and the difficulties in following the thoughts so numerous, that many people who read poetry with pleasure, and are capable of sympathizing with Browning if they could but understand him, have been deterred from reading his poems. Hence there has been no recent poet about whose productions so much has been written by way of elucidation, and concerning whom opinion has been so divided. The latest addition to the Browning literature is the book before us. Dr. Alexander is well fitted for the performance of such a task. He is known in these provinces as a very successful teacher of English literature, and having observed the influence of such comments and disquisitions upon his students he very properly concludes that they will not be without interest and instruction to the general reader. An ardent admirer of Browning, and qualified by taste, scholarship and sympathy to become his interpreter, Dr. Alexander has presented us with a work fitted in no slight degree to smooth the way for those who have heretofore declined to grapple with the obstacles of style, language and method which at the outset have sorely tried the patience of so many readers.

And yet we must confess that we miss in the "introduction" what we deem necessary to a true understanding of any writer, but absolutely indispensable to a comprehension of Browning and the work which he has given us—a fairly minute *resume* of the incidents of his life. It is true that a few facts are mentioned at the beginning of the chapters on "development," but these are inadequate for the purpose. In the case of a metaphysical poet like Browning, whose eyes are open and whose understanding is clear to all that is transpiring around him, we need a lucid, it may be concise, narrative of his career, so that we may comprehend the conditions under which he wrote, and all the forces within and without him which moulded his character and opinions, and contributed to make him the great poet and potent influence for good which he undoubtedly is. Dr. Alexander says, and there is truth in the remark, that "a man's work is determined not only by the character of his genius, but also by the conditions of his age." Surely, if that is the case, we ought to have detailed in the most forcible manner possible the leading features of the great social, political, religious and philosophical questions which agitate the public mind in as far as their influence is observable in the works of Browning. But we hold that every truly original man who has a message to deliver to his fellows, and is gifted with the faculty of utterance, be he poet or preacher, man of letters or social reformer, is not the mere reflex of his age, but is much in advance of it; and hence his difficulty in finding an audience. It is only by constant repetition, by being instant in season and out of season, by ignoring failure and hoping against hope that at last he succeeds in obtaining a hearing, and wrings from his listeners an acknowledgment of the truth, while to him is reserved the satisfaction which springs from the consciousness that he has not lived in vain. So has it been with Browning. People have long admitted the high and generous aims of the poet, but too many have been willing to accept on trust the opinions of the few who read and felt and understood. They were repelled by his obscurity, his eccentricities of style and expression, and his endless discussion of metaphysical topics; but aided by the patient and pious toil of such scholars as Dr. Alexander and others the appreciative reader can dig deep in the vast mass of original material which he has given to the world, and bring up pure untempered gold.

It is deeply to be regretted that Browning did not profit by such experience as is to be gained at the public school and the university. Educated in private he pursued only such courses of study as might fit him for the career of a poet. Besides the restricted view which he thereby obtained of a liberal education, he was exposed to the danger which threatens all who are privately or self educated, of becoming narrow in his sympathies and opinionative in his judgments. In the rough-and-tumble of school and college life, many corners and rough edges are rubbed off the student's character; he must mingle with his fellows and is not allowed to dream alone. Idealist and transcendentalist as he was, Browning would have been all the better of closer association with his kind, and his works would have borne, in a less degree, the impress of the recluse. It would in no way have impaired the force or dimmed the brightness of his favorite ideas "that spiritual discipline and consequent growth are the proper object and end of the existing system of things; that imperfection is a necessary and beneficial attribute of our present sphere; that here truth, beauty, goodness, are but relative,—dim and imperfect images that serve to kindle our aspirations and lead them upwards towards the absolute;" but it would, by bringing him into more intimate and more sympathetic relationships with mankind at large, have greatly facilitated the reception of the communications which he had to make to them.

In his selection of illustrative passages from the works of Robert Browning, Dr. Alexander has shown admirable taste and judgment. In his comments, though we cannot always agree with him, he exhibits careful study and a knowledge of the literature of his subject, wide and intimate. He discusses with acuteness and discrimination the distinguishing intellectual and moral characteristics of the great master of psychological monologue and the dramatic lyric, and satisfies us that though the gold is sometimes hard to find, still it is there to reward the patient seeker.

We do not suppose that Browning will ever become a popular poet. His foreign subjects and exceptional types of character go far to prevent it. But among those who think, his readers will always be on the increase, and Dr. Alexander has undoubtedly contributed to this result by the publication of his Introduction to the Study of the Poetry of Robert Browning.

The teaching of grammar, in a good many instances, is a matter more of memorizing definitions than in appealing to the proper qualities of the mind to be brought in operation in the pursuit of this study.—*Inspector Bridges, N. B.*

AMONG THE CONSTELLATIONS.

An Astral Alphabet.

V.

The Hyades, in Taurus, form a V, beginning with Alpha (Aldebaran), first magnitude, half way down, two fourth magnitudes, Theta (1), Theta (2), at the angle, a fourth magnitude, Gamma, half way up, a fourth magnitude Delta, and, at the upper end, a fourth magnitude, Epsilon. In our star map Epsilon has been displaced towards Aldebaran, thus spoiling the outline of the V. We shall have this corrected the next time we use the cut.

X.

Sirius (the dog-star) is at the vertex of two remarkable triangles, the base of the upper one forming an equilateral triangle, being a line drawn from Betelgeuse in Orion to Procyon, and the base of the lower one a line drawn from Phaet in the Dove to Naos in the Ship. These two triangles being joined at their vertices, in Sirius, present the figure of an enormous X, called by some the Egyptian X. The two lower stars of the figure (Phaet and Naos) are seldom seen above the horizon.

W

Between Taurus and the north pole star, in the milky way, is the constellation *Cassiopeia*, or the old woman in the chair. Its principal stars form a double V, one of the V's not being exactly of the same size and shape as the other.

A.

Autumnal A is a brilliant outline in the region of the sky occupied by the sun in autumn. It can easily be picked out from the following directions, this time of the year:

The vertex of the A is Beta Leonis (Denebola), the lowest star in the trapezium in Leo. The end of the lower leg of the A is Alpha, of Virgo, called *Spica*, a star of the first magnitude, down towards the south-east, in the evenings in April. The other leg ends in Alpha, of Bootes—that is, *Arcturus*, a magnificent first magnitude star. These three stars, *Denebola*, *Spica*, and *Arcturus*, form nearly an equilateral triangle. Produce the two last stars in the tail of the Great Bear towards the east and it will pass near enough to *Arcturus* to point it out. Produce a line from the pole star, through Mizar, the star in the middle of the Great Bear's tail, down towards the southern horizon, and it will indicate Spica.

The stars forming the cross-stroke of the A are as follows, going northerly, Gamma, Delta, and Epsilon, of Virgo, all of the third magnitude. Gamma Virginis is one of the most interesting double stars in the heavens. It is nearly midway between Denebola and Spica.

Astronomical Notes for May.

Mercury on the 1st will be in Aries, on the 6th in Taurus, three or four moon-breadths below the Pleiades; on the 12th above Aldebaran in the Hyades, about fifteen moon-breadths; on the 21st eight or nine moon-breadths above or north-east of Zeta Tauri; in the first week of June it will pass above or northward of Eta Geminorum, one of a pair of third magnitude stars close together. Its eastward course will then become stationary and move southward between the pair of stars and slowly proceed westward to meet the sun on the 19th (*inferior* conjunction).

Venus will be morning star, moving westward towards Alpha Arietis until the 20th, when it will be about four moon-breadths north of the star, it will then commence to retrace its course slowly.

Mars will be five or six moon-breadths below the Pleiades on the 6th; above Aldebaran in the Hyades on the 23rd about twelve moon-breadths, and about the 1st of June it will be on our star map (see April Review), near where 5h. right ascension is intersected by 23° north declination. In a word Mars will be near Aldebaran during the whole month.

Jupiter is still low in Sagittarius but slowly moving west. It souths during the month from about 4 a. m. at the beginning to about 2 a. m. at the end.

Saturn is still in Cancer, and moving very slowly towards the Sickle in Leo, and from the "Praesepe" or Beehive in Cancer. During the whole month, however, it will not make the progress of three moon-breadths. Whitaker's almanac is in error when stating that Saturn can be seen in Leo during this month. It will not cross into Leo until about the 25th of June. Saturn is now in a favorable position for obtaining a good view, with an ordinary telescope, of its rings. These rings are sometimes seen edgeways, at other times they are at an inclination of twenty-seven degrees to the observer on the earth. They may now be seen at an inclination, which, though not the greatest, yet is favorable for observation.

The *moon* about the 1st of May will pass between the Pleiades and Hyades in Taurus. On the 7th it will pass a little over two of its own breadths above Saturn in Cancer. It will cut the handle of the Sickle in Leo between the 8th and 9th, passing midway between Regulus (or Alpha) and Eta. It will leave Leo on the 11th and enter Virgo near the equinoctial, thus describing a slanting line across our star map if its course were plotted on it. On the 17th it will, with half its own breadth above Jupiter in Sagittarius, be in conjunction with Venus in Aries on the 26th, and with Mars in Taurus on the 29th.

FERNDALE SCHOOL.

No. XXII. A Domestic Fish.

Our plenteous streams a various race supply,
The bright-eyed perch with fins of Tyrian dye,
The silver eel, in shining volumes roll'd,
The yellow carp, in scales bedropped with gold;
Swift trout, diversified with crimson stains,
And pikes, the tyrants of the watery plains.

Pope — *Windsor Forest*, Line 141.

S. But the carp isn't yellow, with golden scales.

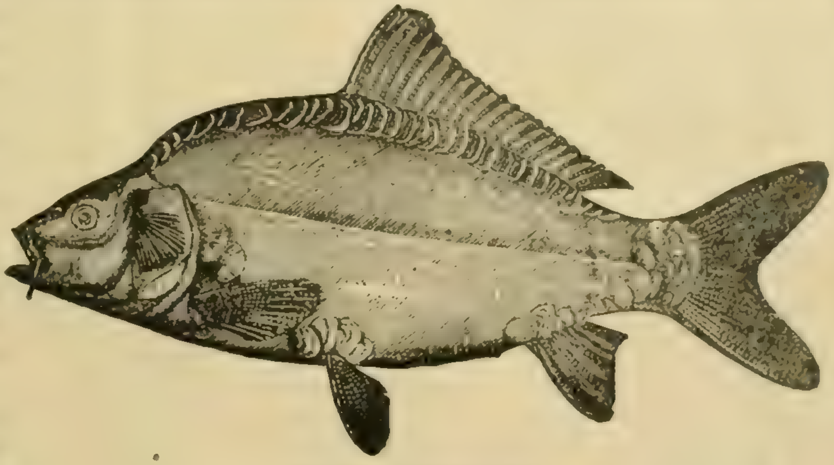
T. The poet refers to the goldfish, which is a species of carp.

S. But we never saw any carp in our brooks, like the specimen before us.

T. True enough. Our specimen has been presented by Mr. Thomas McDonald, of Durham, Pictou County, who only a few years ago got some from Washington; and it is only twelve years since they were brought to the Washington carp-culture ponds from Germany.

S. How could they be taken alive from Washington to Nova Scotia?

T. A gallon tin of water will accommodate 20 of them for a long journey.



The Carp.—(*Cyprinus carpio*).

S. And where does he keep them?

T. In a large shallow pond.

S. And do they grow fast?

T. In a good warm pond they grow very rapidly and multiply at an extraordinary rate. A five pound fish may deposit in one season half a million eggs.

S. And what do they eat?

T. Insects, leaves, roots and sods of grass. Or they may be fed by throwing on the water boiled grain, dough, bread, cabbage, lettuce, pumpkin, boiled potatoes, etc., if they are cut into small pieces.

S. Why, they are just like pigs, that is why you call it a domestic fish.

T. Correct. The culture of carp commenced as early as 1227, in Austria; and at the present day it is of great magnitude in Germany. The annual product of one estate alone being about 500,000 pounds.

S. Is it hard to make carp ponds.

T. No, not so very hard. I will tell you some day how Mr. McDonald makes his. Perhaps some of your parents might like to try it.

S. Yes. One might change a good-for-nothing piece of swamp into a beautiful shallow lake, with millions of beautiful carp in them; and whenever we wanted fresh fish we would only have to go to the pond.

Another S. Yes, and a great number of them might be sold every year and a good deal of money made by them.

T. That is why I give you this lesson. You can talk about it when you go home. In Nova Scotia, New Brunswick and Prince Edward Island, a great many people could have beautiful and valuable ponds on their farms. And an acre of pond would return more money than any other acre. But we shall talk of the proper kinds of ponds again.

S. The carp might be frozen during the winter or starved.

T. No. The pond should have a deep muddy bottom in one portion. During winter they are very easily kept, for they go down into the mud and live like the bears and the bees, in a state of hibernation. You would not have to house them or feed them during winter as we do our pigs or cattle.

There are three kinds of carp cultivated, the *scaled* carp, the "leathery carp" without any scales, and the "mirror carp" which we have before us.

S. What large shining scales it has just only on some parts of its body.

T. You will notice that it has on the back ——

S. A large fin.

T. How many? One. The Latin for back is *dorsum*. The fin is therefore called the dorsal fin.

S. Some fish have two dorsal fins.

T. Correct. "Pectus," "pectoris," means the breast. Do you know any word derived from it?

S. Pectoral balsam.

T. Very well, the first pair of the lower fins are—

S. Pectoral fins.

T. The next are the ventral fins and the last the anal fin. You notice the lobes of the tail or caudal fin?

S. Yes, two equal lobes. Have all fish such tails?

ANOTHER S. No. The shark they caught at the shore had one lobe longer than the other.

T. Try the fins, are they bony spines or soft and pliable?

S. They are soft and pliable.

T. The Greek for soft is "malakas;" and accordingly a large division of fish is called the *malacopteri* —soft finned. Can you name others like the carp in this respect.

CHORUS. Trout, salmon, herring, minnows.

S. Wouldn't it be nice to have a carp pond?

Plants in their Homes and in the School Room.

Part V. How to Form a School Herbarium.

We have been asked to give a few directions how to form a school herbarium, or to make a collection of the plants of the neighborhood for preservation and future study. This may be accomplished with a little care and pains, and will add greatly to the interest of plant study. The whole school may take an interest in this, and procure specimens for preservation; but the teacher, and a few of the older pupils to aid him, should attend to the pressing and drying of the plants, which requires considerable care and patience. The process will take between a week and a fortnight, according to the weather. Very little apparatus is needed. Two smooth boards, 18 to 20 inches long, and 12 to 15 inches wide, with a weight (a flat stone) of twenty or twenty-five pounds, will make a good plant press. Some sheets of porous paper—newspaper will serve the purpose very well—cut in sizes of 18x12 inches, will complete the apparatus.

Let all the pupils be interested in procuring and bringing in the plants. Especially let those plants which are made the subject of study be preserved. A tin box or a portfolio is usually taken to the field, in which plants may be brought home in a fresh state for preservation; but these are not essential. By taking up the plant carefully, root and all if a small plant, with some earth attached, and carefully placing it in a newspaper, it may be brought fresh to the school room. Carefully detaching the earth from the roots the plants may be placed with leaves and flowers spread out so as to show to the best advantage between the folds of the drying papers. When the plants are thus placed (several on one sheet if they are small enough) two or three layers of paper may then be added, other specimens placed on these, and so on; care being taken that the plants are not too close together, and that several folds of paper are placed between each layer. They may then be placed between the boards and the weight put on top. Plants will dry more rapidly where they are exposed to the sunshine and a good draught. The dryers should be changed every day for the first four or five days, and then every other day, until every particle of moisture is removed.

Collect for preservation only complete and perfect specimens. Suppose it is the Mayflower. Do not take a part of a plant, but dig down, get the root and the whole cluster that grows from it, only let the specimen be such as can be placed on a sheet of paper when mounted of sixteen and one-half by eleven and one-half inches, for that is the standard size of botanical mounting paper. When the specimens are thoroughly dried they may be affixed to sheets of white paper, moderately stiff, of the size above mentioned. Paper for this purpose is prepared and sold. Glue may be used to fix the plant to the paper, or it may be allowed to remain loose on the paper or between two sheets, which will be the better way if the plant is to be examined on future occasions and serve for illustrations to classes; and that is the object in making collections of dried plants.

After plants have been pressed so that all the moisture is removed, it is customary to place them carefully away for future mounting, with a label attached. This should be put with the plant when first laid in press, on which is written the name of the plant, the locality in which it is found, and the date of collecting. If you are unable to determine with exactness the name of the plant, send it to some friend who perhaps has had more experience in such matters than you have had.

In this way the beginning of a collection, which in future seasons will represent the complete flora of the neighborhood, may be made. Perhaps not more than twenty species can be collected this season. Let them be perfect specimens, carefully selected and dried. It is just as much trouble to dry a poor specimen as a good one. And above all, let the plants so collected and preserved, represent the work done for the season in the class; that is, let them be studied as carefully as the capacity of the pupils will admit.

There need be no expense—beyond a few cents expended for white paper on which to mount the plants—and only a moderate amount of skill and patience in making a school herbarium. If there is no school cabinet in which to preserve the plants a large portfolio may be made, into which the specimens may be placed after they have been dried and mounted. Binder's board or some stiff material may be used as an outside cover for the portfolio; then folios of stiff paper in which all the species of a family may be placed. If the family is large two or more of such folios should be used. For convenience of reference the names of the family should be neatly written on the *lower right hand* corner of the covers containing the species, and the name of each species with locality and date of collection written on the lower right hand corner of the sheet which contains it.

HINTS FOR THE SCHOOL ROOM.

PHYSIOLOGY—DIGESTION.

(Continued from the February number.)

III. Pepsin.

T. The stomach is the alimentary tube enlarged into a great curved pouch, which may be about a foot long when filled, and four or five inches in cross diameter. It is generally much smaller than this. The lower end of it is just below the end of the breast bone, and on the right side of it. The principal bulk of it is higher up, and on the left side of the middle of the breast bone. The rough drawing on the blackboard will show its shape and position.

S. If a person were to eat bread in a hurry would not the saliva swallowed into the stomach change the starch into glucose sugar?

T. No. Ptyalin will not convert starch in an acid fluid. The walls of the stomach are filled with innumerable minute glands besides the mucus gland, and these pour out a thin colorless fluid which should always be acid, and is called the gastric juice.

S. Couldn't a little soda be taken to make the gastric juice alkaline, so that the *ptyalin* could act on the starch?

T. Yes. But a still greater mischief would then be done. The most important substance in the acid gastric juice is *pepsin*. If I were to chop up some small pieces of meat or the solid white of an egg, and put them into a glass test tube before you, with a little warm water and a few drops of hydrochloric acid and then add sufficient *pepsin*, in a few hours the solid meat or white of an egg would be dissolved into a whitish liquid. If the liquid was not made acid the pepsin would not dissolve the solids.

S. Then the stomach cannot digest starchy foods?

T. No; it is impossible. But it can dissolve what we call albumen or proteid foods, such as lean meat, gelatine, the gluten or gummy portion of bread. It changes all these into a whitish fluid, which are called peptones, and which can be absorbed through the mucus lining of the alimentary canal, and taken into the capillary blood vessel, lymph vessels and lacteals, by which they are carried to the larger vessels.

S. I thought you said there was digestion going on all through the alimentary canal. The stomach then must fail to digest all the food.

T. You are correct. The starch remains unchanged, and so do the fats. They may collect into little drops like oil in the midst of the *chyme*—the grey pulpy mass into which the food is now changed—but these oil drops cannot be absorbed. Then again, albuminoid food which has not been broken up by the teeth into the finest fragments, can only be dissolved slowly on the outside.

S. Then if a person "bolts" his food without sufficient mastication it may not all be dissolved in the stomach.

T. Precisely, although the stomach may do its very best.

S. How does it do its very best?

T. Well, as soon as food is come into it the glands begin to pour out the gastric juice copiously. As much as twenty-four pints per day is supposed to be secreted on the average. And all this is made out of the blood by the glands in the walls of the stomach. In the second place, the stomach keeps constantly working up, rolling over and pressing together the food with these juices, although we are not conscious of the motion.

S. Then, thorough mastication is just as necessary to assist the complete digestion of albuminoid foods?

T. Certainly. Then when the stomach is tired of its work it commences to expel the *chyme*, whether all the food is digested or not, through its narrow neck, which is called the pylorus, into a tube which is bent right back beneath the stomach, and which is called the *duodenum*. This constitutes the third *foot* of the alimentary canal, or the first foot in length of the small intestines, which we shall consider in our next lesson.

IV. Bile and Pancreatic Juice.

T. The duodenum—so called originally because it is about twelve finger-breadths in length, is the commencement of the small intestines; but its digestive work is so important that it is always considered as a distinct division.

S. Is all the digested *chyme* absorbed by the walls of the stomach?

T. By no means. Some is; but absorption of the digested food occurs principally in the small intestines.

S. The end of the duodenum is only three feet from the mouth. Then the food has to go through twenty-five feet more.

T. Correct. But let us follow the course of the food after passing through the pylorus. The acid chyme, bathing the walls of the intestine, causes an abundant flow of the golden red bile fluid through a small tube which opens into the duodenum. This fluid is alkaline, and drenches the greyish and acid chyme as it passes, changing its color and reducing its acidity.

S. Where does the bile come from?

T. From the liver, which is therefore a great gland secreting or making the reddish-yellow bile fluid out of the blood, to the amount, perhaps, of from two to three pints per day in the average man.

S. When the chyme is made alkaline by the bile the pepsin coming from the stomach must stop dissolving the proteids. And will the ptyalin commence then to change the starches to sugar ?

T. A good idea. A portion of the chyme goes on a long way before it loses its acidity, and peptic digestion is still going on there. But the use of the bile appears to be two-fold. It commences to dissolve or emulsify the fats so as to make them capable of absorption. But it especially prepares the chyme for the *pancreatic* fluid, which is poured into the duodenum from the *pancreas* immediately after the bile. The pancreatic fluid is strongly alkaline and contains trypsin, which dissolves proteids or albuminous matter more powerfully than pepsin. It has also a second ferment, which changes starch into sugar like the ptyalin of the saliva ; and a third ferment or substance, which dissolves or makes a cream of fats.

S. Then the bile and the pancreatic fluid is the most universal solvent of all the different kinds of food.

T. Quite correct. And if the chyme were not made alkaline by a sufficient quantity of bile the pancreatic fluid would have no solvent effect at all.

S. So then, in the mouth the food is necessarily digested in an alkaline medium, in the stomach in an acid medium, and in the duodenum in an alkaline medium again.

T. You are right. And after this stage the chyme is changing into a whitish milk-like fluid called *chyle*, which is absorbed through the walls of the smaller intestines, which are covered with a fine velvet-like pile, offering a large surface for absorption.

V. Conclusion.

S. What are the parts following the duodenum ?

T. First comes the *jejunum*, so called on account of its generally being found empty after death, about seven feet long ; then the *ileum*, about twelve feet in length, so called on account of its position in the lower half of the abdomnal cavity, where it lies much convoluted. Last of all comes the large intestine, about five feet in length. It starts from near the base of the abdomen, at the right side, where the slender ileum enters its wall at right angles as it were, a short distance from its lower end, which is closed, and is called the *cæcum*, the first division of the large intestine. The second division, called the *colon*, ascends at the right side of the bowels, then goes right across in close proximity to the stomach and duodenum to the left side, and then descends the left side and terminates in the portion named the *rectum*.

S. Are there any digestive fluids poured out into the food in the small intestines ?

T. There is what is called the intestinal juice; but much that is certain is not known of it. That the nineteen feet of the small intestines is where the greatest amount of absorption takes place there is no doubt. The material is moved along by contractions like those we have noticed in the act of swallowing in the gullet, only the contractions are not so violent. They are called *peristaltic* movements. The chyle, after passing through the thin scarf skin of the intestines, is collected into innumerable very minute, lymphatic capillaries, which are generally called lacteal vessels from the milk-like nature of the fluid. These capillaries unite as small streams do into larger ones, and the larger vessels pass away through the *mesenteries* which bind the intestines in their proper place to the wall of the abdomen. From thence it is carried to a greater vessel, the thoracic duct, and finally is thrown into the blood current entering the heart and becomes new blood itself, ready to build up any wasting portion of the body, whether it should be nerve, bone, muscle or gland material.

T. What do you think now ? Can there be good health with bad digestion ?

S. No. Because the food taken does not become a part of the body to repair the waste in the blood, nerves, gland substances, muscle and bone.

T. How may bad digestion be brought about then? Let me see how many different answers I can get.

S. By swallowing food hurriedly without mixing with saliva. By swallowing it in lumps so that the digestive fluids can not get at more than the surface.

T. Yes ; such food will undergo putrefaction instead of digestion.

S. Anything that will change the natural character or quantity of the saliva, the gastric juice, the bile, the pancreatic juice or the intestinal fluid must injure digestion.

T. Very good indeed. Now what do you think might have such an effect on digestive secretions ?

S. Gum chewing, tobacco chewing, tobacco smoking, rum drinking, anything poisonous, too much cold water, too much tea, too many pickles, too many sweeties, too much of anything, anything which makes a person feel bad.

Notes on the Mayflower of the Loyalists.

By G. F. Matthew, M. A., F. R. S. C.

It has been suggested that the delicate and modest little flower which we call the Mayflower should be adopted as the emblem of the Loyalists, because it is in full bloom at the season of the year when they landed on these rocky shores. In this connection it may not be out of place to inquire as to the use of the word "Mayflower" or "May blossom" in the past; and specially to ask what was the *Mayflower of the Loyalists?* Was their Mayflower identical with our spring favorite; or was it some other plant, to us unknown; or if known, called by some other name?

Our Mayflower has been named by botanists *Epigœa repens*, or the plant that *creeps on the ground*—a name very appropriate to its habit of growth as it forms patches of foliage, branching and spreading on the ground from a central root. The flowers are found at and near the ends of the branches, and are almost concealed from view by the thick, leathery, shining, dark-green, round-oval leaves. The Mayflower delights in a rocky and not too fertile soil. When it grows in richer land it is apt to be choked by the surrounding plants better adapted to such situations; and in very shady places it will not blossom. It craves a well mulched surface with gravelly, or rather stony soil beneath, and seems to enjoy itself most where granite and trap rocks, or quartz rocks prevail. On and around reefs or ledges of such rock, on the border of the forest, the Mayflower spreads its refreshing green, and perfumes the air with its delicate fragrance. It is as wild by nature, and as hard to tame, as the savage that once roamed master of the wilderness where it still abounds; hence, many attempts to cultivate it have failed, for it is easily killed by kindness or injudicious care. The Mayflower belongs to the great family of the Heaths, and its nearest allies in this country are the Bearberry*, Spicy Wintergreen† and Teaberry‡. They, like the Mayflower, have evergreen leaves, and differ in this respect from most of the American Heaths.

The barren and gravelly soils of many tracts in North-eastern North America, and its moist climate are particularly well suited to the Mayflower, and it flourishes here in abundance. Warned by the experience of many seasons on the Atlantic coast, it does not open its petals when the spring rains first remove the snow, but awaits the advent of warm weather, knowing full well that the warm days of early spring are deceptive, and that the chilling winds from the Gulf of Saint Lawrence and the snow-clad hills of Labrador, will, later on, chill the air and interfere with the development of its tiny tubular blossoms, protected though they are by enveloping scales and sepals without, and by a fluff of woolly hairs within. On Lake Superior and the inland region generally the Mayflower has greater confidence in the sun's power, and as soon as the snow is gone, confidently opens its petals to the vernal breeze.

But the purpose of these remarks is not so much to describe the Mayflower and its habits as to enquire whether this flower of ours was the Mayflower of the Loyalists. The writer was very much surprised, many years ago, on being told by an old lady who came here with the Loyalists, that our plant (*Epigœa repens*) was *not* the Mayflower. Among wild flowers that were afterwards shown to her, she at once recognized one as the true Mayflower. This was the plant which is now called the Spring Beauty (*Claytonia caroliniana*), a delicate little plant with two opposite leaves, which are not unlike an Indian's canoe-paddle in shape, and having a cluster of nodding pink flowers between the leaves. The short stem which the Spring Beauty annually sends up comes from a little brown tuber, buried deep in the rich mould of the hardwood forest. The plant differs from *our* Mayflower in preferring a rich and moist soil, and its stem is soft and succulent like its ally the Purslane (*Portulaca*); while the stem of *our* Mayflower is strong and woody, and its leaves thick and hard.

The family to which the lady belonged, who spoke of the Spring Beauty as the true Mayflower, came from Connecticut; and it is easy to see why our Mayflower was not theirs. In the region where they had lived the Epigæa would blossom in April and the term "Mayflower" would be inappropriate to it; hence, some other blossom would with them have borne the name of "Mayflower." The name and the associations connected with it were dear to those New England colonists. With what object more attractive could they have associated the ideas and the name, than the delicate Spring Beauty—a plant which abounds in the rich woods, covering the mountains and hills of Western New England and New York? To the Loyalists of Connecticut, therefore, the word "Mayflower" carried a different meaning from that which it bears with us.

And to the Loyalists of New York and New Jersey, where the Epigæa was known as the Trailing Arbutus, the idea of "Mayflower," as applied to this plant, was equally foreign. Their name for our Mayflower, however, was not happily chosen, as the Arbutus was one of those European heath-plants, which casts its leaves in the autumn, and in this resembles such

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*Arctostaphylos. †Gaultheria. ‡Chiogenes.

American heath-plants as the Leather-leaf (*Cassandra*) and the Lambkill (*Rhodora*). These cover the "barrens" with foliage and flower in June and July, but are bare and brown in the winter. As the term "Trailing Arbutus" was used in the Middle States for the Epigæa within a short time after the Loyalists left there, it was probably current in their time as well. Whether the Spring Beauty was their Mayflower or not, it is sufficiently clear that the Epigæa was not.

But to go one step farther back in the history of the "Mayflower," Washington Irving, in his "Knickerbocker History of New York," describes in a very amusing way the helplessness of the Dutch Governors of New York in their attempt to oppose the colonizing tendencies of the New Englanders. He describes the encroachment of the Yankees upon the territory of their Dutch neighbors on the northern shore of Long Island Sound, and they even swarmed over into Long Island, displacing the Dutch or occupying the country in advance of them. These Puritan farmers carried with them the tradition that their ancestors came over from England in the "Mayflower." Many of them settled in Connecticut, and their descendants formed the bulk of the emigrants from that State whom we know under the name of Loyalists. It is quite clear, however, that the Mayflower for which the ship of the Pilgrim Fathers was named was not the "Mayflower" of the Loyalists, any more than the plant so designated by the latter is the Mayflower of the Maritime Canadians, for neither the Epigæa (repens) nor the Spring Beauty were known to Europeans before the discovery of America. They are both natives of this continent and are unknown in the old. The Mayflower of the Pilgrims must, therefore, have been some other plant—perhaps the Hawthorn (*Cratægus oxyacantha*), which appears to be alluded to by Mickle in the following lines:

> "By this stream and the *May blossomed* thorn
> That first heard his love-tale and his vows."

And by Spencer in the following:

> "To gather *May busket* and smelling brere
> And home they haste the postes to dight."

And in Chaucer there is the following line:

> "And fresher than the *May* with flowres newe."

The Hawthorn still bears in England the name of "The May," and there can be little doubt that its fragrant blossoms suggested the name borne by the pioneer ship of the Plymouth colony.

As the location of the Sacred Mount—the point of dispersion of a primitive people—was transferred by the migrating Indo-European nations from one country to another in the Old World, so the Saxon emigrants to and in the New World, successively transferred the name of "Mayflower" to a new species of plant, as they lost their familiarity with the old. To us, living in a region where Epigæa abounds, and blossoms in May, it very appropriately bears the name of Mayflower, not only on account of its beauty and its fragrant flowers, but because it blooms in the spring. It is rightly chosen by the descendants of the Loyalists as a fitting emblem of those who, a little over one hundred years ago, first set foot on the shores of New Brunswick. Its home is in that region of the North American continent which extends from the Atlantic coast of Nova Scotia, through New Brunswick and Maine, to Eastern Ontario, Lake Superior, and the rocky wilds of the North West. In Ontario and the Atlantic Provinces of Canada is the home of the Loyalists, and when the first detachment of these people landed on the rocky shores of St. John harbor, in the spring of 1783, there can be no doubt that they found the Mayflower (*Epigæa*) blooming around them. In its leaves, fresh and green from beneath the winter snows, they would have seen an emblem of their own preservation through adversity in the past; and in its modest and fragrant blossoms an omen of content and prosperity in the future.

In conclusion it may be added our reflections upon the Mayflower lead to the following result:

The Mayflower of the Pilgrims was not the Mayflower of all the Loyalists.

The Mayflower of the Loyalists was not the Mayflower of the Maritime Canadians.

The Mayflower of certain of the Loyalists was the Spring Beauty.

The Mayflower of the Maritime Canadians (*Epigæa*) may very fittingly be dedicated to the Loyalists.

Or, to consider the matter from a chronological standpoint, it may be said that two hundred years ago the Hawthorn was the Mayflower. One hundred years ago the Spring Beauty was, to some Loyalists, the Mayflower.

Now, the Epigæa is to the descendants of the Loyalists, the Mayflower.

One hundred years hence, to such of the children of these descendants as shall have migrated to the great plains of the Canadian North West, *some other plant* will be the Mayflower.

Moss-embowered trailing Epigæa,
Clear as Diana's alabaster brow,
The gem of April's robe—sweet Epigæa!
Thy purity is stamped upon my heart
In "angel whiteness," and thy odorate breath
Redeems the grossness of the earth and links
Our senses to the spirit world beyond!

For the Review.]

School Music.

In a former paper I endeavored to present a plea for the introduction of music into our public schools, as a pleasure and benefit for one and all; and now I wish to speak of some of the difficulties to be met, and suggest some method whereby the best results may be obtained, and the subject made clear and interesting.

Music is more analogous to language than to any other study, and should be taught in a similar manner, the principles underlying both being the same.

Let us first consider the youngest child attending our public schools—the average age we will call six years—and assume that he has received no previous musical training. Look back for a moment to the time when his mother first taught him to lisp the baby words, by associating them with objects familiar to him, and thus slowly built a vocabulary into his mind. Gradually he puts the words together, and when he enters school is able to speak quite readily. At this period music should be taken up in the same way.

Eminent psychologists have agreed that the faculties of the mind are developed by four natural and successive steps. The first, sense perception, which enables the child to see the object; second, sense conception, by which faculty he begins to realize something about the object; third, imagination; and fourth, reason. So with music as with other studies we must awaken the child's senses, and gradually develop them as he becomes able to grasp new ideas.

Returning in thought to the first school days, let us place music before the child as the mother does the first steps in speech, and teach him pure rote singing. By this I mean singing from a good example or model. This plan at once appears practicable and natural, and has been strongly endorsed by Matthew Arnold, Locke, Frœbel and Pestalozzi, and many other men of broad and gifted minds. By this method the highest aims in teaching children may be realized. And just here we might appropriately consider what these aims should be in music.

I would answer that the same principle which actuates every earnest worker in imparting knowledge to others should prove its value in music as well. The opportunity is ours to begin to train the child's musical ear for life; and did all realize how much depends upon these early lessons more care and attention would be given to the work. The tendency with children is to sing too loudly; seemingly they think the one who makes the most noise does the best. But we should strive for softness and purity of tone. Make them understand the sentiment of their little pieces, that an appreciation of and sympathy with their work may be aroused and developed as their knowledge increases.

Great care should be paid to the correct pronunciation of words, and this may be aided in a great degree by constantly reminding the child to open his mouth naturally, and let the words flow freely as in speaking. Also, attention should be paid to the pitch or starting point. In all of the first songs no tone lower than F should be selected as a key note. Otherwise the chest tones are exercised too much, which has a tendency to make them coarse and unpleasant, and the pure head tones—the sweetest part of the voice—are neglected when they should be strengthened and improved.

There is some diversity of opinion concerning the amount of work to be accomplished by the children during their school course. If they have never sung I think the first six months might very profitably be spent in pure rote work, placing before them a good variety in the selections, and taking special care that the habits thus early formed be correct and helpful toward future good results. Should it chance that some previous training had been theirs, the teacher can easily determine how much rote singing is needed towards training the ear and cultivating a taste for the best kind of music. Then, by degrees, I would introduce to them the first step in the theory of music until they have a full comprehension of the "staff," "bar," "double bar," "clef," the value of the different kinds of notes and rests, the scale, ascending and descending by number, letter and syllable, and the places the letters occupy upon the staff.

At the beginning of the third year's work some exercises may be taken by the class that the teacher constructs upon the scale; and in all of the work particular attention should be given to the quality of the tone produced, the erect position, good attention, careful pronunciation of words, and pure air in the room. It will often happen that they grow restless, and seem not to enjoy the work. At such a time do not—for the satisfaction of gaining an immediate result—force the work upon them. A change to something of a different nature will often work wonders. I would not have the first aim abandoned but accomplished in another way. A certain amount of diplomacy and tact is creditable in teaching music as well as in other subjects.

Following the school course into the grammar grades we realize how much the preparatory work has done towards singing by note, which should now be introduced. I would recommend singing in unison most of the time for the next two years, as neither the boys nor the girls are strong enough (musically speaking) to sustain separate parts. The first three months the children should be trained entirely in reading the notes in the key of C., it being the simplest and easiest to understand.

By making this key an example, each variety of note and rest may be explained from it, and each complication in time—that all-important subject in respect to which musicians and teachers find so great a lack of understanding on the part of pupils.

When these principles have been mastered, the transposition into the different keys is comparatively easy, and should follow the sight reading in the key of C. When once the pupil understands that each line and space is marked by a letter, the position of which never changes, but simply that we use different letters as a starting point and apply the syllables accordingly, the first letter always being *do*, the second *re*, and so on, the work is easily accomplished.

In the sixth year two-part singing may be commenced, and let none be discouraged if his success at first seems small. At the beginning I would divide the school, having all the girls sing the upper and the boys the lower part, and later on, if any wish to change allow them to do so. With a little discretion on the part of the teacher music may be given them to suit the range of their voices. Place before them all the variety possible, and only of the highest type. For as some one has truly said, "Only the best is good enough for children." By spending twenty minutes each day in practice the desired results will surely follow; and so systematic and progressive is the work that it cannot fail to aid in the one great purpose for which all school life is designed, the fuller development of the mind.

After looking over this outline should anyone chance to ask: "How can we find time for music when the school course is already so crowded?" I would answer him by another query: "Life is so full of necessary duties which constantly stare us in the face, showing how serious life really is, and how short is the time in which to achieve any of its great possibilities—how can we spare time for any mere amusements?" We trust the reply is demonstrated in the life of the individual; for all know that the pleasurable side instead of proving a drawback acts as an impetus to our work. And in the same way music in schools adds much happiness and benefit, and awakens, brightens and inspires for other duties. It is a relief to the tired mind and not an added care.

The question as to a person untrained in the art of music being able to instruct others has often been discussed; and as I have lately come in contact with just such a one a word concerning the case may not seem inappropriate. The teacher to whom I refer made herself proficient so far as the principles went, but lacked all power to sing. However, determined to succeed, and aided by a pitch pipe, she gave the children the correct sound at starting, detected their errors and explained how they could be corrected, and I have rarely entered a school where the pupils did so well. All cannot be professionals; but each one can aid in the advancement of this much-needed and powerful agent in elementary education—"school music."

I will close by a few remarks upon the system of music which has for so many years served all who have made use of it, from grand old masters to young ambitious beginners—the staff notation. Its good qualities are often painted in such sombre hues that the clear and systematic outline of music written in this notation seems wrapped in clouds of mystery, and only a few favored ones may behold its development. But far other is the case. We have a course in staff notation founded upon the work of the great and gifted German, Hohmaim, whose work in Germany, the land of music, has been so thoroughly endorsed, by being made the basis of school music in that country. It deals with all grades, from the lowest primary through the highest classes. We have surely a grand list of talented men when we mention Mozart, Mendelssohn, Bach and Beethoven and many others who have given us compositions suited for both young and old.

No testimony that I might write would half express the value of this notation as do the successful results that have been achieved by its use; and while other methods may aid, nothing can supplant or take the place of this one, which is thoroughly systematic and complete in its development throughout, and holds a rank high and grand for the good work accomplished by its use in the past and the rich promise it gives for the future.

M. U. G.

Truro.

But give me, Lord, eyes to behold the truth;
  A seeing sense that knows the eternal right;
A heart with pity filled and gentlest ruth;
  A manly faith that makes all darkness light;
Give me the power to labor for mankind;
  Make me the mouth of such as cannot speak;
Eyes let me be to groping men and blind;
  A conscience to the base; and to the weak
Let me be hands and feet; and to the foolish mind;
  And lead still further on such as thy kingdom seek.

For the Review.]

"We Agree to be Kind to Animals."

We are not apt to realize that our conduct influences not only those among whom we live but that animals as well become good, bad or indifferent, according to the character of those by whom they are surrounded.

The benefit that children derive from having the care and responsibility of pets is often spoken of, and very often a girl or boy is highly commended because he or she is known to be the possessor of a cat, dog or bird. On the other hand it would oftentimes be interesting to know just what that pet thought of its owner. One naturally supposes that the boy or girl who has a pet gives it the very best care and attention, but warm beds, freshly aired houses and plenty of food do not make the sum total of "good care." How would a boy feel if his father or mother never said a pleasant word to him, never asked after his welfare, or expressed delight in his enjoyments? And how many boys there are who never think it necessary to talk to the pets committed to their care.

It is ridiculous to say that animals cannot understand nor do not appreciate such attentions, because it has been proved time and again that such is not the case. Among the pets in a certain household are crows, dogs, pigeons, rabbits, canaries, a pony, a tiny marmoset, and a pretty grey Java sparrow. These animals are all great favorites with the children, and are treated by them as companions in the broadest sense of the word. The canaries, from having been talked to, have come to know what is said to them—in a limited sense, of course,—but still they know when they are spoken to and when they are the subject of conversation. The sparrow, who has always had its freedom during the day, was at first caged at night, as it was feared he might fly into the lamps or strike against some bright object in the room. If by any mischance his cage was not opened for him as soon as the daylight faded he would fly down upon the table, chirping and hopping from place to place until the desired attention was attracted, and he was safely housed until the next morning, when he would stand before the door waiting for it to be opened and his liberty given him again.

The rabbits are the tamest, but perhaps it is because rabbits are invariably so shy, that these seem particularly noticeable. They know no fear whatever, but will come to be petted as soon as they see anyone, and are never happier than when being talked to. The crows have picked up one or two words and say "hello" distinctly; they bark like the dogs, imitate many sounds, and resolutely refuse to allow strange boys to enter the barn in which they live, regarding it, evidently, as their personal property. It is the same with the other pets, and it is only to show how very friendly and companionable animals will become when the opportunity is given them that these instances are cited.

We have known and heard of animals, on the contrary, belonging to apparently kind boys who were timid, cross and stupid. It is not an unfrequent thing to hear of a parrot that is in the habit of swearing, and this accomplishment has, too, been spoken of with pride, the poor bird's owner forgetting that its words were only a repetition of his own thoughts.

Apart from the simple justice of treating animals, humanely and considerately, such a course will add to their value as protectors of mankind and promoters of civilization. For instance, in one family was a big Newfoundland dog, a great pet and play-fellow. He had been taught to consider the children, particularly the baby, as his especial charge. Wherever the little ones were there was "Major" keenly alive to all dangers. Often at night he would go from room to room looking into the beds to see if all were safe. If any restless little sleeper had burrowed out of sight beneath the clothes, "Major" would hunt until his search was rewarded by finding what he sought. Nothing was more pathetic than to see him grown old, blind, lame and deaf, trying to join the children in their games, and painfully seeking out and keeping near the one who, "though older grown," was still the baby.

All are familiar with the brave St. Bernard dogs and their lives devoted to the saving of human life. Would they be as gentle to the lost traveller if they, themselves, were not treated with love and kindness? Next to the nobleness of the St. Bernard, stands, I think, the confidence of a beautiful Irish setter, who brought the pretty little pup—her only one—that she had accidentally killed and laid in the lap of one of the family, sitting down beside her with a look in her great brown eyes that was heartbreaking. The poor dog had known only love and care, and felt sure that in this case what she could not accomplish would be an easy task to those who had always shown her such kindness.

And this kindness, gentleness and patience to animals must help to develop our own lives and to enable us to influence for good the lives of those about us. A very lovely story is told of Mr. Corliss, the inventor and engine builder. He had a number of men at work blasting out some rock for building purposes. One day some of them found in a cleft of the rock a nest, on which a little bird was sitting. They knew that the next blast would destroy the nest and showed it to Mr. Corliss. The great man—for this act stamps him great, if nothing else does—when he saw the nest with its tiny eggs and the anxious little mother fluttering near, ordered the men to stop working, and for six weeks or until the birds were ready to leave the nest, the great engines stood idle, and the men waited patiently until the little bird led her family to other homes. Mr. Corliss did not allow his men to suffer during the period of their enforced idleness, but found them other employment or paid them regularly while they waited for the "flitting of the birds."

Mr. Henry Longfellow, who loved everything that had life, tells a pretty story of the Emperor Charles of Spain. During one of his campaigns a bird built her nest on his tent; when the time came for the Emperor to return from the battlefield, the eggs were not hatched, so the Emperor ordered his soldiers to leave his tent—

> "So it stood there all alone,
> Loosely flapping, torn and tattered,
> Till the brood was fledged and flown,
> Singing o'er those walls of stone
> Which the cannon shot had shattered."

In another poem Mr. Longfellow tells of the benefit the birds were to the farmers in destroying all the insects that despoiled the crops, but the farmers only realized that the birds stole the corn, and had them all killed; the next summer, however, they saw their mistake, for—

> "In the orchards fed myriads of caterpillars, and around
> The cultivated fields and garden beds
> Hosts of devouring insects crawled, and found
> No foe to check their march, till they had made
> The land a desert without tree or shade.
>
> "But the next spring a stranger sight was seen,
> A sight that never yet by bard was sung,
> As great a wonder as it would have been
> If some dumb animal had found a tongue!
> A wagon, overarched with evergreen,
> Upon whose boughs were wicker cages hung,
> All full of singing birds, came down the street,
> Filling the air with music wild and sweet."

They had been brought from the neighboring country by the anxious farmers, who at last saw that the stolen corn was more than amply repaid by the birds they had so harshly condemned.

Let us all, when we repeat the words of the Band of Mercy pledge, agreeing "to be kind to animals," remember that it means something more than merely plenty to eat and drink, and that—

> "He prayeth best, who loveth best
> All things both great and small,
> For the dear God that loveth us
> He made and loveth all."

St. John. M.

Educational Institute of New Brunswick.

To the N. B. Editor of the Educational Review:

Allow me to correct an error which was unfortunately made in the programme of the Educational Institute as published in your last issue. The days should be Wednesday, Thursday and Friday, instead of Tuesday, Wednesday and Thursday.

Of the gentlemen invited to open or take part in discussions upon the subjects of the papers to be read, the following have expressed their consent: John March, Esq., M. A., J. R. Dunn, Henry Town, W. M. McLean, A. B., Inspector Smith, C. H. Cowperthwaite, A.B., R. P. Steeves, A.M., G. R. Inch, Sc.B., N. W. Brown.

HERBERT C. CREED,
Sec'y-Treas. Ex. Com.

For the REVIEW].

Volapuk.

How is Volapuk progressing in Canada? This is a question which there is at present no means of answering satisfactorily. As it is desirable that some one should be able to report on the subject the writer respectfully requests that	Lio Volapük mostepom in Kanadan? At binom sak ut keli no sibinom atupo medot gesagona plidiko. Bi binos viplikos das ek okanomov nunodon tefu din at, penel at begom stumafuliko das
ALL STUDENTS OF VOLAPUK IN CANADA	STUDELS VALIK VOLAPUKA IN KANADAN
will at once send him their names and addresses, with a brief statement of their attainments in the language, and the number of Volapukans in their localities. Also, if there are any Volapuk clubs let them be reported.	osedoms ome lesuno nemis e ladetis omsik, ko sesag blefik do dagetam omas in puk at, e num Volapukanas in topofs omas. Leigo, si binoms-la vpaklubs sembal panunodosos.

EDUCATIONAL AND OTHER PERIODICALS IN CANADA

are respectfully requested to publish the above request, with this one appended:

The writer has had correspondence in Volapuk with France (St. Maurice), Italy (Venice and Vicenga), Russia (St. Petersburg), Hanover (Hildesheim), Prussia (Breslau), England (Hull), the United States (New York, Boston and Worcester), and Nova Scotia. At present there are before him recent letters and post cards addressed to a friend in Volapuk, from Strasburg, Buda-Pesth, Hildesheim, St. Galles, and Salzburg.

(Address), HERBERT C. CREED,
Fredericton, N. B.

April, 1889.

QUESTION DEPARTMENT.

SUBSCRIBER.—Can you inform me through the REVIEW, if there is in Canada or the United States a school for preparing students to teach English in a foreign country by the Berlitz method? Where can I write for catalogue of such institution?

EDUCATIONAL OPINION.

Latin and French should evidently be accorded a place in the B syllabus of examination. Teachers now holding first-class licenses might remain undisturbed. But a fair knowledge of Latin and French should be added to the requirements of this grade for the future. In the neighboring Province of P. E. Island the elementary classics are taught in all the schools of the first-class—with what result? Every village and hamlet can point with pride to the brilliant record of its young men, both in their native Province and on many a well-contested field here and across the Atlantic.—*Inspector Gunn, N. S.*

More gratifying than the material improvement in our schools, above noticed, is the decided advance in the *professional spirit* of the teachers in this part of the Province. They seem anxious to attain a higher plane of thought and adopt broader views of education, and to have learned that the only way to do this is by a diligent study of the principles which underlie all educational processes. Many of them not only subscribe for and carefully read our own educational journal, the REVIEW, but have provided themselves with such works as "Thring's Theory and Practice," "Fitch's Lectures," "Browning's Educational Theories," etc., with a determination to learn the views of these great masters in the profession.—*Inspector Mersereau, N. B.*

While complaint may be heard that teachers may be hampered for want of material for the oral part of the course, the fact should be noticed that trustees are beginning to understand its importance, and to include apparatus in their estimates. At Lockeport there is an excellent collection of minerals. The trustees of the Shelburne Academy have made a useful addition to their chemical stock. At the former school I saw many specimens of forest growths of Nova Scotia cut into triangular sections, showing the natural grain of the wood, the bark and the smoothed surface. Young ladies pointed out the differences and the many uses to which these products are turned in the industrial world. Evidently much more is done in a good many schools than is made manifest at a superficial glance. This sort of work is comparatively new. The majority of teachers have received no training for it. They have to contend against a natural timidity, but they are showing a desire for a better preparation. The development of taste in this direction is shown by the large number of copies of the EDUCATIONAL REVIEW and other papers of a similar character which are taken in the district. A reference to the tables will show the extent to which the high school studies have a place in the schools. The Yarmouth Academy leads the way, having a registered attendance of eighty-seven pupils. The programme of subjects for the summer term included the whole course except physics, chemistry and geology. The following tables, though not exhausting the list of subjects taught, show the schools and the number of pupils in each doing advanced work. It is in these schools that most of our young people, especially those qualifying for the higher grades, receive their training for licenses.—*Inspector Munro, N. S.*

I think that many of the teachers would be encouraged and stimulated in their work if more frequent visits were made to the schools by the trustees and parents. Public examinations are a species of educational fireworks pleasant to observe but usually giving a very inadequate idea of the solid work of the school or the methods employed. Much misconception regarding the work of our schools would be removed by a more intimate acquaintance by people interested with their every-day work.—*Inspector Carter, N. B.*

BOOK REVIEWS.

THE POCKET GAZETEER OF THE WORLD, edited by J. G. Bartholomew, F. R. G. S., etc., London. This little volume is so valuable and convenient for reference that none should be without it. Not like the large and cumberous volumes that have hitherto served as gazeteers, which adorned book shelves rather than served for use, this one can always be kept at hand. It is beautifully bound and printed. It seeks to answer the question concerning every place of any importance on the globe—"Where is it ?" and "What of it ?" and this it does for 35,000 places. In addition it has nine maps, illustrating general features of geography. For sale by J. & A. McMillan, St. John, N. B.

EVANGELINE, decorated with leaves from Acadian forests. Nothing could better illustrate the skill of the bookmaker's art than this beautiful volume. It gives a fresh attraction to the story which possesses such a deep interest for Acadian readers. With such a volume as this before him, decorated with "garlands of autumn leaves" of every possible hue and shape, the poetic reader will receive fresh inspiration. For sale by J. & A. McMillan, St. John.

HALIBURTON, the man and the writer, by F. Blake Croffon, Provincial Librarian of Nova Scotia. This is the title of No. 1 of a series of annual publications to be issued by the Haliburton Society of Windsor, N. S., which has for its object the development of a distinctive literature in Canada. Mr. Croffon's paper is a valuable one, and its selection by the society as their initial publication is appropriate. Prof. C. G. D. Roberts, the president of the society, contributes a prefatory note.

THE MIND OF THE CHILD, PART II. THE DEVELOPMENT OF THE INTELLECT; by W. Preyer, Professor of Physiology, University Jena ; D. Appleton & Co., New York, publishers. This remarkable contribution to the science of psychology is the ninth volume of the International Education Series, edited by Dr. W. T. Harris. It is translated by H. W. Brown, of the State Normal School, Worcester, Mass., with a clearness and force not always found in translations from the German. It is so readable that anyone will be interested in a cursory perusal, whilst its science of the unfolding of the intellect of the child from the earliest period is so full and complete that the mastery of its contents will require careful study. Preyer began his observation of his boy five minutes after birth, and continued them three times a day with very few interruptions for three years. The facts and phenomena recorded are grouped under three headings, "Senses, will and intellect," these again being sub-divided. A conspectus of thirty-one pages brings into easy view for comparison this record, which (excluding theory and hypotheses) deals simply with facts noted down at the moment. Pains were taken to keep the child unconscious of these observations and from all influences, such as learning by rote things he could not possibly understand and silly tricks of mimicry, so that his development should be natural and unforced. *Is there any thinking without words?* In opposition to Max Muller, Preyer, we think, proves to a demonstration that while intellectual development is stimulated by language it is not wholly dependent upon it. Like many another knotty point that philosophers may discuss *ad infinitum* in the closet, the appeal to nature and the study of a child show us that long before he can speak, or even understand speech, he has ideas. It has become fashionable to preserve photographs of children from an early age, and if a diary of facts accurately observed and carefully recorded went with them much light might be thrown on child life, which, as a guide to the educator, would be invaluable If some of our readers will undertake the task they will find a model and guide in the conspectus. But the desire to prove "forwardness" in a child must be rigorously excluded. The seventeenth chapter on "Parallel between Disturbance of Speech in Adults and Imperfections of Speech in the Child" is a masterly *resume.* * * * * The intelligent reader will agree with Preyer "to observe the child every day through the first thousand days of his life, in order to trace the historical development of speech, was possible only through self-control, much patience and great expenditure of time ; but such observations are necessary from the physiological, the psychological, the linguistic and the pedagogic point of view, and nothing can supply their place."

Elementary Chemical Technics, by George N. Cross, A. M.; 123 pages. Price $1.25. Eastern Educational Bureau, Boston, publishers. This is an admirable little work to aid the teacher of chemistry in manipulating his experiments. The directions are clear, terse and accompanying with drawings, and the teacher who uses this book cannot fail to arouse a new interest in his class work.

Elementary Synthetic Geometry of the point, line and circle in the plane, by N. F. Dupuis. M. A., F. R. S. C., Professor of pure mathematics in the University of Queen's College, Kingston, Canada. (London: MacMillan & Co., and New York, 1889).

Professor Dupuis is a genius in his way, and his little octavo of some 300 pages contains a most interesting presentation of the subject, altogether free from the cumbrous logical machinery of Euclid. Euclid is a classic; but the impression is growing stronger and stronger upon us that we are sacrificing too much to the idolatry of the antique. The method of treatment in the book before us is simple, yet comprehensive. Its logic is as convincing as that of Euclid, while coming more directly to the conclusion. Both the methods and terms used connect more intimately with the common algebraic, trigonometric, and more modern developments of mathematical science.

Analytic Geometry, by A. S. Hardy, Professor of mathematics in Dartmouth College, and author of "Elements of Quaternions." (Ginn & Co., publishers. Boston, 1889).

We have had, a few years ago, made an acquaintance with Professor Hardy's work in his charming introduction to quaternions above mentioned. The present work which is a handsomely bound, beautifully printed volume of 229 pages, is just such a lucidly arranged treatise as we would expect. We have not had time to test the accuracy of the book in detail, but from a general examination we can say we have never seen the subject treated in a clearer manner for the student who has to work his own way.

Scott's Rokeby, edited with notes and vocabulary by Michael MacMillan, B. A., Oxon. London: MacMillan & Co., and New York. The editor thinks that *Rokeby* has never been as great a favorite as it deserves to be. He claims that it is quite able to bear comparison with the very best achievements of Scott's genius. The introduction is a fine critical essay, and the notes excellent.

Shakespeare's The Winter's Tale, edited by K. Deighton, B. A., with introduction and notes. London: MacMillan & Co., and New York. This is a neat and beautifully printed little volume. One excellent feature about the notes is that they do not tell what the average reader ought, unaided, to find out for himself, but are rather suggestive and replete with passages of literature corresponding to those found in the text.

Nature Readers: Sea-Side and Way-Side, No. 3, by Julia McNair Wright. D. C. Heath & Co., Publishers, Boston, Mass. Those who have read with such delight Nos. 1 and 2 of this series will welcome this volume, not inferior to the others in interest and wealth of illustration.

Stickney's Readers, Nos. I., II., III., IV. Published by Ginn & Co., Boston. This is a series of graded readers for use in schools. They are beautifully illustrated and printed, and seem to be admirably adapted to interest and instruct children.

Second Spanish Book. Publishers, A. S. Barnes & Co., New York. This is a work, interesting to students of the Spanish language, by Prof. J. H. Worman. In it, as well as the First Spanish Book, the author works out the natural method of instruction.

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WHOLESALE AND RETAIL.

HINTS FOR TEACHERS OF PHYSIOLOGY. No. XIV., of "Guides for Science Teaching." (Boston: D. C. Heath & Co., 1889).

A cheap, small volume in paper of 58 pages, giving practical hints and convenient experiments, for the effective teaching of the leading principles of physiology. Just the book every teacher in our common schools should spend a few cents to obtain and enjoy. It "shows how a teacher may supplement his text-book instruction by means of simple observations and experiments on living bodies or on organic material."

FIVE HUNDRED CHOICE SELECTIONS from prose and poetry for grammatical exercises and memorizing, with a drill book for review in English grammar and analyzing, by Frances W. Lewis, A. B., Rhode Island Normal School. Boards, pp. 160. Price 75 cents. Boston: Eastern Educational Bureau, 50 Bromfield street. Many teachers in high schools, academies and normal schools, in attempting to induct the students into the principles of rhetoric, have found that the pupils required review in grammar and analysis before they were fitted to grasp the broader and more practical applications of rhetoric. This book is the outcome of the careful study of these difficulties and a very successful mastery of them.

A CLASS-BOOK OF GEOGRAPHY, by C. B. Clark, F. R. S. London: MacMillan & Co., and New York. This is a revision of a popular class-book in geography, published by the MacMillans in 1878. It has been revised and brought up to date in late geographical information, such as the population of towns and the mention of those places which have become important in late years; the bringing up to date of the political geography of Egypt, Turkey and other countries. This book has many excellent features, such as a description of the plants and animals peculiar to the countries described, eighteen colored maps in which the British possessions are made prominent, and in which important cities are figured in side maps on a larger scale, and an appendix in which astronomic geography and chartography are briefly but clearly treated.

OUTLINES OF LESSONS ON BOTANY, by Jane H. Newell. Boston: Ginn & Co., publishers. This work, designed for the use of teachers, or mothers studying with their children, is valuable to those who would give instruction in botany in a practical and interesting way. It takes up the study of buds and branches, growth from seeds, etc., and gives some excellent hints to the working teacher.

THE LEADING FACTS OF FRENCH HISTORY, by D. H. Montgomery. Ginn & Co., Publishers, Boston, Mass. The object of this volume is to present, within the compass of about two hundred and fifty pages, the most important events of the history of France, selected, arranged and treated according to the soundest principles of historical study, and set forth in a clear and attractive narrative. The work is based on the highest French authorities—Guizot, Rambaud, Martin and Duruy. It is illustrated with fourteen maps and complete genealogical and chronological tables. It is also furnished with explanatory foot-notes where they seem to be required. Each section of the history is followed by a brief summary of the ground gone over.

BOOKS RECEIVED.

THE CHORAL BOOK, for home, school and church, mailing price, 70 cents; published by Ginn & Co., Boston, Mass.

HOMER'S ODYSSEY, Books I.-IV. Mailing price $1 50. Published by Ginn & Co., Boston, Mass.

NOS ENFANTS ET LEURS AMIS; published by MacMillan & Co., London and New York.

EXCHANGES.

The Popular Science Monthly for May has a finely illustrated and valuable article, "Beginnings in Science at Mugby School."....*Garden and Forest*, published by D. A. Munro, New York, is especially interesting and valuable this time of year in its articles on gardening and tree planting....In the *Forum* for May, President Hyde, of Bowdoin College, Me., shows the ill effects of school examinations. He analyzes the part that examination properly conducted should play in the work of education, and he shows how examinations, as actually conducted, really defeat the purpose of education and make school work an injury rather than a benefit. It is a practical suggestion by a practical teacher....*St. Nicholas* for May, with its finely illustrated pages and pleasant stories, is at hand....*Treasure Trove*, published by by E. L Kellog & Co., New York, is a capital magazine for young people. Its pages are filled with interesting and instructive reading matter.

The Forum continues to hold its place as the foremost of our magazines for the variety, the value, and the weight of its contributions.—N.Y. Times

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A. E. Coldwell, M. A., Professor of the Natural Sciences, and Curator of the Museum.
L. E. Wortman, M. A., Professor of Modern Languages and History.

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